

AN ORTHOPTEROLOGICAL RECONNOISSANCE OF THE SOUTHWESTERN
UNITED STATES. PART II: NEW MEXICO AND WESTERN TEXAS.

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The first portion of the results of this examination of the southwestern United States, treating of Arizona material, has already been published in these PROCEEDINGS.¹

Seven rather distinct regions were examined in the area covered by this paper, notes on the localities being given below. In addition a number of other localities are represented in the series by lots of from one to six species. A small lot of material from Fort Wingate, McKinley County, New Mexico, collected by Mr. John Woodgate and now the property of the Academy, has also been examined in this connection.

Mr. Otho Poling, of Quincy, Illinois, assisted in collecting some of the material secured at Deming, while all taken at Albuquerque and Aden was collected by the junior author.

The number of species examined and treated in this report is one hundred and fifteen, of which six prove to be new, while the specimens number one thousand, three hundred and ninety-five.

The types of all the new forms are in the Hebard Collection.

El Paso and Franklin Mountains, El Paso County, Texas. Altitudes, 3,700 to about 5,600 feet. July 9 to 11 and 17, 1907.

The vicinity of El Paso may be divided into several regions: first, the low bottom-land along the river, this section being threaded with acequias and a considerable portion is or has been under cultivation; second, a region of low sand dunes slightly northeast of the city, covered with a scattering growth of mesquite; third, a fairly extensive mesa bordering the Franklin Mountains, very broken and rugged on its eroded marginal slopes where is exposed a sort of caliche as the basis of the mesa, and quite level on the summit, all covered more or less completely with rather uniformly-sized greasewood (*Covillea tridentata*) bushes, mingled on the rugged base slopes with mesquite (*Prosopis velutina*) and occasionally tornillo or screw bean (*Prosopis odorata*); fourth, the Franklin Mountains, rising from the mesa to an elevation

¹ *Proc. Acad. Nat. Sci. Phila.*, 1908, pp. 365-402.

of from 5,000 to 7,000 feet. The latter were ascended to the summit of the South Peak, altitude about 5,600 feet, and found to be desert to that height. The slopes of this range are covered more or less uniformly on the lower section with greasewood, while the higher portions are sparsely covered with aloes and other desert species. They were very productive of Orthoptera, *Syrbula fuscovittata*, *Boëtettix argentatus*, *Diapheromera covilleæ*, *Pseudosermyle tenuis*, *Mermiria texana*, *Arphia teporata* and others being taken.

On the mesa and at the foot of the same the greasewood yielded, among others, *Diapheromera covilleæ*, *Boëtettix argentatus*, *Melanoplus bowditchi*, *M. herbaceus*, *Ateloplus macroscelus* and *Litaneutria skinneri*, while *Anconia carulcippennis*, *Heliastus aridus*, *Schistocerca vaga*, *Trimerotropis texana*, *Psoloessa texana*, *Derotmema laticinctum* and *Phrynotettix robustus* were found on and about the mesa. In the sand-hill region the character of the Orthoptera was found to be much like that of the mesa, but in the clumps of mesquite *Melanoplus glaucipes*, *M. herbaceus*, *Æoloplus elegans*, and *Schistocerca shoshone* were found.

The low bottom-land is covered in many places with tangles of screw bean (*Prosopis odorata*), with tall rank weeds in others, and areas of hardened bare adobe are also to be found. In the tornillo tangles *Melanoplus glaucipes*, *Æoloplus elegans*, *Mermiria bivittata* and *Diapheromera mesillana* were found, while the areas of high weeds harbored *Æoloplus elegans*, *Melanoplus herbaceus*, *M. aridus*, *M. atlantis*, *Stagmomantis* sp., and *Diapheromera persimilis*. On the bare spots *Paropomala virgata*, *Derotmema laticinctum*, *Trimerotropis rubripes* and *Hippiscus corallipes* were found.

Alamogordo and Dry Canyon, Sacramento Mountains, Otero County, New Mexico. Altitude, 4,300 to 5,500 feet. July 12 and 13, 1907.

The conditions in the vicinity of Alamogordo have already been treated by Stone and Rehn² and Ruthven.³ Our collecting was restricted to the edge of the mesquite area, on the eastern margin of which the town is situated, and the greasewood slopes leading to Dry Canyon. The mesquite section was unproductive, while in the greasewood belt *Boëtettix argentatus*, *Ectatoderus borealis*, *Gryllus alogus* and *Psoloessa texana* were secured, but most of them not in such numbers as at El Paso. In the broken country at the first foothills and in the arroyos at the canyon mouth collecting was more productive, *Parabacillus coloradus*, *Dichopetala brevihastata* and *Yersinia solitaria*

² *Proc. Acad. Nat. Sci. Phila.*, 1903, p. 16.

³ *Bull. Amer. Mus. Nat. Hist.*, XXIII, pp. 492-499.

being taken and a greater variety of species noticed. Work was continued up the south arm of Dry Canyon to the broader valley-like portion of the canyon above the spring. Here piñon (*Pinus edulis* or *cembroides*) and juniper (*Juniperus pachyphlæa*) appeared, giving the canyon bottom a park-like appearance quite different from the sotol (*Dasyllirion*) and ocotillo (*Fouquieria splendens*) covered slopes at the canyon's mouth. In this region, which is at about 5,500 feet elevation, one *Amblycorypha huasteca* was beaten from a small green tree, while on the barer slopes at the same elevation several interesting species, such as *Yersinia solitaria*, *Syrbula fuscovittata*, *Amphitornus ornatus* and *Melanoplus aridus*, were taken.

At night in Alamogordo several species of Orthoptera, such as *Derotmema laticinctum*, *Trimerotropis texana* and *Gryllus*, came to the street lamps, while Coleoptera and Lepidoptera were attracted in the greatest numbers. Certain species of beetles, as *Cicindela lemniscata* and *Tetracha carolina*, fairly swarmed, and the great moth *Marumba occidentalis* was by no means uncommon.

Cloudcroft, Sacramento Mountains, Otero County, New Mexico. Altitude, 8,600 to 8,700 feet. July 14 to 16, 1907.

This charming spot, situated on the summit of the Sacramento range, does not appear to be on the mountain top except at certain points of lookout, where one looks down on the long slopes and deep canyons of the mountains which sink into the desert plain of the Otero basin or Hueco bolson as it is variously called. The Cloudcroft region is one of low hills with beautiful open vales between them. The hills and some of the level areas are covered with magnificent forests, chiefly of Douglas fir (*Pseudotsuga mucronata*), western yellow pine (*Pinus ponderosa*) and in some places aspen (*Populus tremuloides*). The vales, or "canyons" as they are termed by courtesy, are usually carpeted with numerous grasses and in many places are veritable flower beds. Many of the forest trees are of immense size, and the rich greens of the region are in striking contrast to the colors of the desert but ten miles away, though some thousands of feet below. In a grassy field, bounded on one side by a stand of deciduous saplings and on the other by huge firs, we found *Gomphocerus clavatus*, *Melanoplus calidus* and *M. atlantis* plentiful. One specimen of *Eritettix variabilis* was also taken in this location. Among the firs on the border of this field a single *Chlæaltis abdominalis* was heard stridulating among some low herbage near a stump and was captured. The very noisy *Circotettix undulatus* was plentiful in open spots in the forest, along the roads and on bare lumbered slopes. One *Melanoplus altitudinum* was found in damp

grasses at the junction of two of the glades, and another specimen was taken on a steep hillside in open conifer forest. In the latter situation *Acrydium crassum* was also taken. Search in many pine and fir logs disclosed only a few *Ceuthophilus*, *valgus* and *uniformis* being taken.

The nights were very chilly and no katydids were heard. The effect of the cool evenings was apparent in the scarcity of *Melanoplus calidus* and *Gomphocerus clavatus* before ten in the mornings, both species occurring in numbers in the afternoon.

Aden, Donna Ana County, New Mexico. Altitude, 4,382 to 5,000 feet. July 21, 1907.

The plain about this station differs from the greater part of the southern New Mexican desert plains in that it is covered in most places by low grasses, giving it some slight resemblance to the Great Plains. Over this plain small mesquite bushes are scattered at greater distances than usual. Near the railroad track the grasses grow in great profusion, reaching in many places a height of nearly a foot. In this location Orthoptera were found in very great numbers, among the series taken being several plains species not found on the surrounding deserts.

About a quarter of a mile from the station a rounded hill rises directly from the prairie. This hill is very rocky and covered by a scattered growth of greasewood (*Covillea tridentata*), and in spite of its elevation of not more than 600 feet above the surrounding plain several mountain-loving species, such as *Eritettix variabilis* and *Arphia teporata*, were found on it. It is interesting to note that such forms of Orthoptera were to be found on this solitary little knob, in spite of its small size, low altitude and the fact that it is several miles distant from the nearest hills.

Deming, Luna County, New Mexico. Altitude about 4,350 feet. July 18-21, 1907.

About the town of Deming stretches a typical desert plain, covered with groves of medium-sized mesquite (*Prosopis velutina*) and large areas of rabbit-weed (*Isocoma heterophylla*), broken on the north by the bed of the Mimbres River. On both sides of this stream-bed are extensive flats of white sand closely dotted with tall yuccas. These flats average about half a mile to a mile in width and are hard to cross, owing to the loose and yielding sand. No low vegetation is present on these areas, and but two species of Orthoptera, *Trimerotropis texana* and *laticincta*, were taken in the section. On the north side of the sand and yucca belt, in extensive rabbit-weed tracts, collecting was very productive, *Hesperotettix viridis* being found in

abundance and *Pseudosermyle straminea* and *truncata* were taken, the former in numbers, the latter sparingly. As Deming is a considerable distance from the greasewood slopes at the bases of the nearest mountains (Florida and Cook's ranges), those areas were too distant to be examined on foot.

The interesting roach *Homæogamia erratica* was found at night about lights in the town, while *Hormilia elegans* was attracted the same way.

Florida Mountains, Luna County, New Mexico. Altitude, 4,500 to 5,500 feet. July 19, 1907.

By driving fourteen miles across the mesquite plain from Deming and ascending the gradual greasewood slopes the Florida Mountains were reached. Various stops on the way revealed nothing of special interest in either the mesquite or greasewood areas. A canyon at the north end of the range, extending southwest under the towering bulk of Capitol Dome, was our objective point. A small spring which trickled a short distance over the rocks before disappearing proved very attractive to *Telmatettix aztecus*, which was present in numbers on the damp spots. The slopes of the canyon were rugged and steep, but we ascended the east face to about 5,500 feet elevation. On the semi-barren slope, with here and there a holly-like scrub oak and numerous scattered mountain bushes, the former often with a precarious hold between boulders, Orthoptera were not uncommon and in character were very interesting. Among the species found were *Yersinia solitaria*, *Mermiria texana*, *Melanoplus aridus*, *Mestobregma plattei* and *Trimerotropis cyaneipennis*. The steepness of the ascent and the short length of time at our disposal prevented us from reaching the summit of the mountains. The slopes at the foot of the mountains did not yield even moderately good collecting and but two or three common species were taken.

Silver City, Grant County, New Mexico. Altitude, 5,900 feet. July 20, 1907.

About one-half day was spent at Silver City, collecting on the rounded hills west of the town. Various short grasses scantily covered the tops and slopes of these hills, with here and there in the ravines and valleys clumps of juniper. Collecting was not very productive, the only species worthy of note being *Aulocara rufum* (the first New Mexican record), *Cordillacris apache*, *Stirapleura pusilla* and *Trimerotropis melanoptera*.

Albuquerque, Bernalillo County, New Mexico. Altitude about 4,900 feet. September 14, 1907.

Nearly all the collecting at Albuquerque was accomplished near the river in low grassy fields and areas of cultivated ground. In this location Orthoptera were found in great numbers, but collecting was made difficult by the swarms of mosquitoes which were everywhere very active and vicious. On areas of short grass were found *Encoptolophus texensis*, *Litaneutria skinneri*, *Paropomala calamus* and *virgata* and *Mermiria bivittata*, while in the higher and more succulent growths of heavy weeds, clover and grasses many *Melanoplus bivittatus*, *M. femur-rubrum*, *M. differentialis* and *Nemobius utahensis* were found. A single specimen of *Telmatettix aztecus* was captured by a pool beside the river and one other specimen was seen. In the arid foothill section but two specimens of *Trimerotropis fascicula* and one or two *T. vinculata* were found.

BLATTIDÆ.

BLATTELLA Caudell.

Blattella germanica (Linnæus).

A specimen of this cosmopolitan species was attracted to light at Deming, July 20.

TEMNOPTERYX Brunner.

Temnopteryx desertæ n. sp.

Type: ♀; Johnstone, Valverde Co., Texas. July 8, 1907. M. Hebard. [Hebard Collection.]

A very peculiar species with lateral, non-attingent tegmina. Its relationship is closer to *T. limbata* Saussure from eastern Mexico and *T. lobipennis* Saussure from Brazil than to any other species of the genus, differing from the former in the more elongate and non-attingent tegmina, which reach to the apical margin of the first abdominal segment, and in the shorter and thicker cerci; from the latter in the proportionately shorter tegmina and much smaller general size.

In general appearance the resemblance of the species to those of the genus *Loboptera* is very great, but the wings are present as distinct, articulate though functionless appendages, which is not the case with *Loboptera*.

Size small; form depressed, ovate. Head with the occipital outline arcuate and distinctly projecting beyond the pronotum; space between the eyes great, slightly more than that between the ocellar spots. Pronotum slightly broader than longer, moderately arcuate transversely, lateral and cephalic margins slightly thickened, cephalic margin arcuato-truncate, lateral margins moderately arcuate, caudo-lateral

angles rounded rectangulate, caudal margin very slightly arcuate; caudal portion of the disk with a pair of shallowly impressed areas. Tegmina about equal to the pronotum in length, elongate trigonal, reaching to the margin of the first abdominal segment, the greatest width contained one and one-half times in the length; costal margin straight, arcuate at the base and at the apex, sutural margin arcuate, the apex very narrowly rounded; anal vein distinct, arcuate, reaching the sutural margin distad of the middle, costal field separated by a moderately impressed line; space between the tegmina about equal to the width of one of them. Wings falling slightly short of the tips of the tegmina. Mesonotum and metanotum with their margins truncate. Abdomen with its greatest width distinctly exceeding that of the pronotum; proximal dorsal segment with the margin arcuate, second with the margin slightly arcuate, third, fourth and fifth sub-truncate, sixth and seventh arcuate-emarginate, eighth arcuate-emarginate laterad and produced obtuse-angulate mesad; supra-anal plate trigonal, apex rectangulate, medio-longitudinal carina blunt; subgenital plate moderately arcuate in transverse section, margin arcuate, truncate mesad; cerci distinctly but not greatly exceeding the subgenital plate, heavy, depressed, fusiform, apex moderately sharp. Limbs so badly damaged that the spine formula cannot be satisfactorily determined.

General color of the head and pronotum ochraceous, becoming paler toward the lateral margin of the pronotum; color of the abdomen and thoracic segments except the cephalic half of the mesonotum which is ochraceous, chestnut, venter of the abdomen chestnut mesad becoming ochraceous laterad, subgenital plate tawny ochraceous, venter of the thorax and limbs pale buff. Eyes black; tegmina chestnut with the costal portion pale buff; cerci burnt sienna edged with blackish.

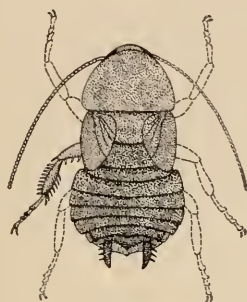


Fig. 1.—*Temnopteryx desertæ*
n. sp. Dorsal view of type.
($\times 3$.)

Measurements.

Length of body,	9.5 mm.
Length of pronotum,	3 "
Greatest width of pronotum,	4.1 "
Length of tegmen,	3 "
Greatest width of abdomen,	5.2 "

The unique type was found upon overturning a small boulder on the bare desert.

HOMEOGAMIA Burmeister.

Homœogamia erratica Rehn.

At Deming, July 18 to 20, a series of eleven males of this species was collected at night about electric lights in the town. All the specimens were taken on rough walls or screens upon which a light shone, excepting one specimen which was flying about a light, much in the manner of a Noctuid, but not so erratic. There is in the lot an appreciable amount of variation in size, and in a few specimens the disk of the pronotum is darker than in others. In all of the eleven individuals the interspace between the ocelli is greater than that between the eyes, although in one specimen the difference is very slight.

This is the first exact record of the species from New Mexico.

MANTIDÆ.

YERSINIA Saussure.

Yersinia solitaria Scudder.

On rocky slopes and ledges and on scattered boulders at altitudes of from 4,300 to 6,000 feet this species appears at home. Perfectly protected by its coloration which harmonizes with its environment, it is with considerable difficulty that individuals are located. When disturbed they spring very quickly to a new resting-place, often jumping as much as six inches, frequently repeating their spring several times until a place of safety is reached.

A series of twenty-six specimens was taken at the following localities: Dry Canyon, Sacramento Mountains, 4,900–5,500 feet, July 13, two males and two females; Aden, 4,386 feet, July 21, one male; Florida Mountains, 5,100–5,200 feet, July 19, eight males, five females; Silver City, 5,900 feet, July 20, four males, one female and two with the sex not determinable as the apex of the abdomen is missing in both. The majority of the individuals collected are immature, but several from Dry Canyon, a number from the Florida Mountains and one from Silver City are fully adult. Adult males from the Florida Mountains range from 19 to 22 mm. in length of body, while mature females from the same locality show extremes of 18 and 25 mm. In color numerous shades are present—clay color, ochraceous, orange-red, wood brown, seal brown and greenish-yellow, one specimen being parti-color, the head, pro- and mesothorax and limbs pale orange-red, the remainder of the body very pale ochraceous.

Two males and two females from Fort Wingate, New Mexico, taken

September 15-16, 1908, by John Woodgate, have also been examined.

The records given herewith are the first published ones of the species from southern New Mexico, while the known range extends from western Nebraska and southwestern Colorado south to central southern New Mexico and southeastern Arizona.

LITANEUTRIA Saussure.

Litaneutria skinneri Rehn.

At El Paso this interesting species was taken in three quite different situations: swept from dry grass in sandy ground along the Rio Grande, July 10 (one ♂); swept from greasewood on edge of mesa, 4,200 feet, July 11 (one ♀), and taken from the bare face of a precipitous rock at 5,000 feet elevation in the Franklin Mountains, July 9 (one ♀). One male and two females were taken on dry bunch grass at Albuquerque on September 14, while five immature specimens (two ♂, three ♀) taken at Aden, July 21, on grass prairie, and at Silver City, July 20, are provisionally referred to this species. The Albuquerque females and the Franklin Mountains individual are equal to the female type in size, while the other El Paso female is distinctly smaller and less robust. The Franklin Mountains specimen is blotched and barred with seal-brown on a pale mars-brown ground, a coloration eminently protective as our field notes mention the blending of this insect's coloring into the surroundings.

The range of this species now extends from the Grand Canyon region, Arizona, and Albuquerque, New Mexico, south to the Huachuca Mountains, Arizona, and the vicinity of El Paso, Texas.

STAGMOMANTIS Saussure.

Stagmomantis sp.

Immature specimens of a species of this genus were taken as follows: on irrigated land at El Paso, July 10 and 11; at the east base of the Franklin Mountains, July 9; Alamogordo, July 13; Aden, July 21, on rabbit weed; Deming, July 18; Silver City, July 20. Of the eleven specimens before us all are in the green phase except one which has the thorax dark brown. The Alamogordo specimen is a female nearly mature.

PHASMIDÆ.

PARABACILLUS Caudell.

Parabacillus coloradus (Scudder).

This peculiar walking stick was encountered at three localities, viz.: Dry Canyon, 5,000 feet elevation, July 13, two females; Clouderoft,

8,600 feet elevation, July 15, one male; Aden, 4,400-4,500 feet elevation, July 21, five females. The Clouderoft male is apparently mature, the remainder being in about the same stage of the immature condition.

At Aden and in Dry Canyon the species was taken by beating low vegetation, while at Clouderoft it was captured in a clump of grass under pines and fir. Two females, taken at Fort Wingate, New Mexico, Nov. 4, 1907, and Sept. 9, 1908, by John Woodgate, have also been examined. The range of this form now extends from Nebraska and Colorado south to southern New Mexico and west to southern California.

PSEUDOSERMYLE Caudell.

Pseudosermyle straminea (Scudder).

This species was present, July 18, in great numbers on rabbit weed on the plain north of the town of Deming and around the dry bed of the Mimbres River. A series of twenty-one males, all adult, and four females in various stages of immaturity was taken on that date. A single male was taken from the same plant on the lower slopes of the Florida Mountains, July 19, while six of the same sex from Aden, July 21, and one other male from Dry Canyon, Sacramento Mountains, taken on July 13, are included in the collection. Practically all of the specimens were taken by beating, the insects exhibiting a striking reliance upon their protective form and coloration. When alarmed they held themselves motionless with legs at stiff angles and, upon experimenting with one of the individuals, this was found to be true when it was picked from the bush, and even when dropped upon the sand it retained its rigidity.

In size there is a considerable amount of variation, the extremes of the Deming series of males measuring 40.5 and 47 millimeters in the length of the body. The form of the male cerci remains essentially the same, some slight but unimportant variations being present. In coloration there appears to be two types, in the male at least, one olive-greenish, the other greenish-yellow, the whitish lateral lines being present more or less distinctly in all the adult males seen. The immature females are all yellowish-green, with very faint indications, in one or two individuals, of the lateral lines.

This species was previously known only from the vicinity of Mesilla Park, Donna Ana County, New Mexico. The range now covers sections of Otero, Donna Ana and Luna Counties.

Pseudosermyle truncata Caudell.

Associated with *P. straminea* on rabbit weed, three males and one

female of this species were taken near Deming, July 18, while under similar surroundings at Aden a pair were taken on July 21.

The males are of very similar coloration, the olive green predominating in one or two more than in the others. The females, however, are quite dissimilar, one being pale yellowish-green, the other pale cupreous green like weathered copper.

The range of this species is now known to extend from Aden, Donna Ana County, New Mexico, to Los Angeles County, California, and from the Grand Canyon region to near the Mexican line.

Pseudosermyle tenuis n. sp.

Type: ♂; Franklin Mountains, altitude 4,500 feet, near El Paso, El Paso County, Texas. July 9, 1907. Hebard and Rehn. [Hebard Collection.]

This new form is a most interesting species, allied to *P. banksii* Caudell, from eastern and east-central Texas. Through the kindness of the describer of *banksii* I have been able to compare the new form with a typical specimen of his species, from which *tenuis* differs in the slightly more robust build with slightly shorter legs though the body is slightly longer, in the absence of a median carina from the caudal portion of the occiput, in the smoother proximal antennal joint, in the narrower pronotum which is distinctly constricted cephalad, in the less distinctly keeled meso- and meta-notum, in the less compressed and more inflated apex of the abdomen, and in the slightly more incurved cerci.

Size medium; form very elongate, extremely slender. Head slightly longer than the pronotum, decidedly longer than broad, slightly narrower at the caudal margin than immediately caudad of the eyes, a pair of short low sinuate carinae present mesad and extending caudad as far as between the caudal margin of the eyes, these carinae sharply constricted between the antennae and again slightly constricted at a point between the cephalic margin of the eyes, a slight median carina present between the paired carinae caudad;

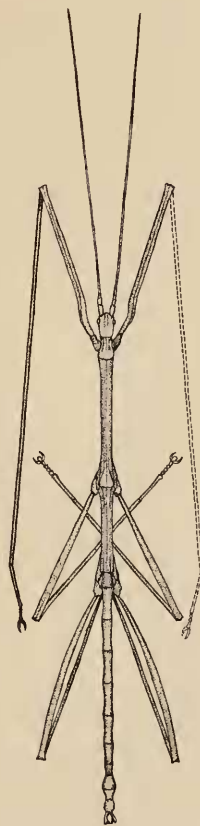


Fig. 2.—*Pseudosermyle tenuis* n. sp. Dorsal view of type. (Natural size.)

occiput smooth; eyes slightly depressed, circular in outline, rather small, not prominent; antennæ slightly exceeding the head and thoracic segments in length, slender, the joints elongate, the proximal joint with a slight lamellate expansion on the proximo-internal portion. Pronotum narrow, the greatest width (supra-coxal) contained about one and one-half times in the length, the cephalic portion strongly constricted with the lateral margins bent ventrad and the section \wedge -shaped; lateral margins very slightly converging caudad of the middle, the caudal margin truncate, a moderate median transverse and a broken longitudinal sulcus present. Mesonotum very slightly less than three times the length of the head and pronotum together, arcuate in section, very slightly expanding caudad, a very slight median carination present cephalad, the whole mesonotum elongate sub-cylindrical. Metanotum including the median segment four-fifths the length of the mesonotum, arcuate in section except caudad where it is flattened, slightly expanding caudad, a slight carination present on all but the median segment, which latter is less than a fifth the length of the metanotum *sensu*

strictiore, with its greatest width (caudal) about equal to the length and the cephalic margin much narrower than the caudal. Abdomen slightly shorter than the thorax, the five proximal joints subequal in length and similar in character and width, each segment being about three times as long as wide and very slightly widened at the extremities; sixth joint about four-fifths the length of the fifth; seventh joint slightly longer than the sixth, narrow proximad, inflated dorsad, ventrad and laterad in the distal portion; eighth segment quite short, tapering caudad; ninth segment slightly longer than the eighth segment, moderately inflated but hardly expanded laterad, the distal margin \wedge -shaped when



Fig. 3.—*Pseudosermyle tenuis* n. sp. Dorsal outline of head and pronotum. ($\times 4$.)

seen from the caudal aspect; supra-anal plate visible as a point between the bases of the cerci; subgenital opercule tubular, moderately large, reaching to the distal margin of the eighth segment, the apical valve small with its margin with a slight projection; cerci about as long as the ninth segment, straight when seen from the side, moderately arcuate when seen from the dorsum, rather robust, trifold, the apical pair of processes less robust than the median one which is



Fig. 4.—*Pseudosermyle tenuis* n. sp. Lateral view of apex of abdomen. ($\times 4$.)

quite blunt at the apex. Limbs slender, the femora, particularly the caudal, very slightly bowed dorso-ventrad. Cephalic femora but slightly shorter than the head, pronotum and mesonotum together, proximal flexure rather sharp; cephalic tibiæ surpassing the head and thorax in length. Median femora when extended caudad reaching to the middle of the second abdominal segment; median tibiæ slightly longer than the femora. Caudal femora reaching to the apex of the sixth abdominal segment; caudal tibiæ slightly longer than the femora; caudal tarsi with the proximal joint about two-thirds the entire length of the same.

General color very pale greenish, becoming buff on the venter and limbs, the head and pronotum ochraceous-buff mesad, a white lateral line extending caudad from the antennæ, bordering the eye dorsad and becoming obsolete on the sides of the pronotum. Apex of the abdomen cream-buff, slightly washed with ochraceous-buff.

Measurements.

Length of body,	65	mm.
Length of pronotum,	2.7	"
Length of mesonotum,	17	"
Length of metanotum (including median segment),	13.3	"
Length of cephalic femur,	21	"
Length of median femur,	18	"
Length of caudal femur,	23	"

The unique type was taken on bunch grass on the east slope of the mountains. Upon being approached it violently shook the stems to which it was clinging, apparently to conceal itself or frighten away its enemies. Upon experimenting we found the insect would repeat this performance as often as approached.

DIAPHEROMERA Gray.

Diapheromera persimilis Caudell.

Two females, one mature, the other not quite mature, taken on irrigated land along the Rio Grande near El Paso, July 10, are referred to this species; the mature individual was swept from tornillo or screw bean, the other from thick weeds. After a careful study of the species of the genus, a tabulation of their more important character in the female sex, and of their measurements, we have reached the conclusion that this species described from the vicinity of Brownsville extends up the Rio Grande valley at least as far as El Paso. The cerci of the specimens in hand fully answer Caudell's description in being intermediate in length between those of *femorata* and *veliei*, while the

measurements as given below with those of the type female of *persimilis* show the similarity of proportions.

	Length of body.	Length of pronotum.	Length of mesonotum.	Length of metanotum (with median seg- ment).	Length of cephalic femora.	Length of median femora.	Length of caudal femora.
	mm.	mm.	mm.	mm.	mm.	mm.	mm.
El Paso	86	3.3	18.1	15	20	15	18.3
El Paso	60	2.9	14.2	12.8	17	12	15.5
Brownsville, type (from Cau- dell)	78	17	13.5	18.5	14	17.5

The proportions of the El Paso specimens are seen to approximate very closely to those of the type female and we feel justified in considering them *persimilis*. Actual comparison with Brownsville females or the acquisition of El Paso males would, however, make the determination more positive. No very close relationship exists to the Mexican *D. calcarata* and comparison has been made with females of *femorata*, *veliei*⁴ and *arizonensis*.

Diapheromera mesillana Scudder.

Ten females, including one mature specimen and others in three immature stages of growth, appear to represent this species, previously known only from the male sex. When compared with the species represented by the female sex in the collections before us they are clearly different, as the following comparison shows:

Head. Similar to *arizonensis* but more depressed.

Pronotum. Much as in *arizonensis*, distinctly shorter than in *veliei*.

Dorsal apical abdominal segments. Longer and narrower than in *femorata*, *persimilis*, and *arizonensis*, much as in *veliei*.

Cerci. Longer than in all but *persimilis* and *veliei*, tapering, acute,

⁴ Brunner (*Insektenfam. Phasm.*, II, pp. 337, 338) has redescribed this species from Texas under the name *dolichocephala*. He entirely overlooked the name *veliei* as well as the species *arizonensis* Caudell, *carolina* Scudder, *mesillana* Scudder and *persimilis* Caudell.

grooved on the internal face, much shorter than *veliei*, much more acute and less subequal than in *persimilis*.

Subgenital opercule. Nearest to *veliei*, but blunter.

A key to the females of the five species before us would be as follows :

- A.—Cerci hardly more than half the length of the eighth abdominal segment.
 - B.—Subgenital opercule arcuate at the apex, . . . *femorata*.
 - BB.—Subgenital opercule arcuato-truncate at the apex with a distinct median projecting finger, . . . *arizonensis*.
- AA.—Cerci decidedly more than half the length of the eighth abdominal segment.
 - B.—Apical margin of the subgenital opercule not reaching to the apical margin of the eighth dorsal abdominal segment.
 - C.—Head narrow, but little exceeding the cephalic width of the mesonotum. Cerci as long as the ninth dorsal abdominal segment, . . . *veliei*.
 - CC.—Head broad, half again as wide as the cephalic width of the mesonotum. Cerci no more than half the length of the ninth dorsal abdominal segment, . . . *mesillana*.
 - BB.—Apical margin of the subgenital opercule reaching to the apical margin of the eighth dorsal abdominal segment, . . . *persimilis*.

Three of the specimens of *mesillana* measure as follows :

	Length of body.	Length of pronotum.	Length of mesonotum.	Length of metanotum.	Length of cephalic femora.	Length of median femora.	Length of caudal femora.
	mm.	mm.	mm.	mm.	mm.	mm.	mm.
El Paso (adult).....	82.5	3.2	18	15.5	18.8	13.5	17
Deming (immature).....	47.2	2.5	11	9.8	13.3	9.3	11
El Paso (immature).....	40.5	2	9	7.8	9.6	7	8

Of the series referred to *mesillana*, a single one (adult) was taken at El Paso on July 17 on mesquite in the desert, an immature individual was collected at the same place on July 10 on the irrigated land along

the Rio Grande, while seven in various stages of growth were taken at Deming on July 18 on the rabbit weed and mesquite flat, and a single immature specimen was taken on the lower slopes of the Florida Mountains, July 19.

A bleached female specimen from Pecos, Texas, in the collection of the Academy belongs to this species. It has been immersed in liquid preservative at some time and in consequence is somewhat shrivelled, but the character of the head and the apex of the abdomen show it to be *mesillana*.

The range of the species now extends from Reeves County, Texas, to Luna County, New Mexico.

CERATITES⁵ n. subgenus.

Closely related to true *Diapheromera*, but differing in the presence of a pair of horns on the head in both sexes,⁶ and in the peculiar recurved and inflated margin of the subgenital opercule in the male.

Type.—*Diapheromera (Ceratites) covilleæ* n. sp.

This subgenus includes four and probably five species: the type species, *tamaulipensis* Rehn from Tamaulipas, Mexico, and *beckeri* and *bidens* Kaup⁷ from Mexico, while *saussurii* Kirby⁸ from Dominica probably belongs in this group, although rather anomalous in the uninflated median femora.

Diapheromera (Ceratites) covilleæ n. sp.

Types: ♂ and ♀; Franklin Mountains, altitude 4,500 feet, near El Paso, El Paso County, Texas. July 9, 1907. On greasewood (*Covillea tridentata*). (Hebard and Rehn.) [Hebard Collection.]

Compared with *D. beckeri* and *bidens* Kaup, its nearest allies, the new species differs from the former in the head being longer than the pronotum, in the distinctly larger size and in the unarmed ventral margins of the cephalic limbs; from *bidens* it differs in the distinctly larger size, more distant horns and in the absence of granules from the head and thoracic segments. The cerci and eighth and ninth dorsal abdomi-

⁵ Κερατιτης, one that has horns.

⁶ Horns are absent from the head of a male of a new species from Mexico (*tamaulipensis* Rehn), but the female of that species possesses such well-marked cephalic appendages that we feel justified in considering their absence in the male as purely accidental.

⁷ Berlin. *Ent. Zeitschrift*, XV, pp. 27, 28, 1871.

⁸ *Ann. Mag. Nat. Hist.*, (6), III, p. 501, 1889.

nal segments of the male type are absent or mutilated, the injury being due to the work of a fellow prisoner in the cyanide bottle.

Size moderately large; form moderately slender in the male, more robust in proportion in the female; surface smooth, polished in the male. Head slightly longer than the pronotum, broad, very slightly depressed in the male; occiput moderately inflated, somewhat globose; interocular region with a pair of short, erect, well separated conical horns, the horns placed nearer the eyes than they are to one another; eyes globose, quite prominent in the male when seen from the dorsum, somewhat smaller proportionately and less prominent in the female; antennæ reaching nearly to the apex of the abdomen in the male, reaching about to the third abdominal segment in the female. Pronotum longer than broad, the caudal portion slightly constricted; cephalic margin very slightly arcuato-emarginate, caudal margin subtruncate in the male, very broadly obtuse-angulate in the female; transverse depression broad and deep, making the pronotum subsellate when seen from the side, longitudinal median sulcus very slight. Mesonotum slightly more (♂) or slightly less (♀) than twice the length of the head and pronotum together, rather narrow, subequal distad and expanding in the caudal third in the male, regularly but not greatly expanding caudad throughout its whole length in the female. Metanotum and the median segment but slightly shorter than the mesonotum in the male, three-fourths the length of the same in the female, no broader than the mesonotum and similar in shape in the male, about equal to the widest portion of the mesonotum in the female; median segment slightly (♂) or strongly (♀) transverse, less than a fourth the length of the remainder of the

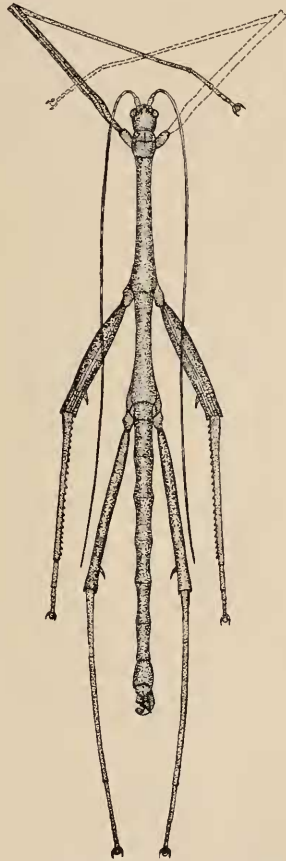


Fig. 5.—*Diapheromera* (*Ceratites*) *covillei* n. sp. Dorsal view of male type. (Natural size.)

metanotum in both sexes, the cephalic margin of the segment arcuate. Abdomen equal to (σ) or slightly longer (φ) than the remainder of the body, the segments slenderer and more elongate in the male than in the female; segments increasing in length to the third which is subequal in length with the fourth and fifth, the sixth is slightly



Figs. 6, 7.—*Diapheromera* (*Ceratites*) *covilleae* n. sp. Lateral outline of head of male (6) and female (7). ($\times 3$.)

shorter; male with the seventh dorsal abdominal segment two-thirds the length of the sixth, moderately inflated distad, eighth and ninth dorsal segments and cerci of the male absent or mutilated, eighth ventral segment of the male very short, strongly transverse, subgenital opercule elongate, narrow, the apical portion sharply curved dorsad and then with the marginal portion sharply bent at a right angle, slightly expanded laterad, the median portion of the apical margin truncato-arcuate; female with the seventh dorsal abdominal segment about two-thirds the length of the sixth, the eighth about two-thirds the length of the seventh, the ninth slightly longer than the seventh, strongly tectate, the apical margin obtuse-angulate emarginate, supra-anal plate tectate, rounded at the apex, cerci short, conic, not a fourth the length of the ninth dorsal abdominal segment, subgenital opercule very slightly exceeding the apical margin of the



Fig. 8.—*Diapheromera* (*Ceratites*) *covilleae* n. sp. Lateral outline of apex of female abdomen. ($\times 3$.)

eighth dorsal abdominal segment, lanceolate, acute-angulate. Cephalic and caudal limbs of the male very slender, the cephalic femora slightly longer than the pronotum and mesonotum together, basal flexure rather shallow, cephalic tibiae distinctly longer than the femora; caudal femora reaching to the base of the fifth segment, armed with a well-developed spine and with the ventral carina slightly serrato-dentate, caudal tibiae distinctly longer than the femora, slightly bowed, the distal extremity very slightly inflated. Median femora strongly inflated, about equal to the mesonotum in length, supplied with numerous carinae, the ventral ones moderately serrato-dentate, the subapical spine very stout, acute, with a sigmoid twist, median tibiae longer than the femora, more robust than the same portions of the cephalic and caudal limbs, markedly serrato-dentate ventro-cephalad.

Limbs of the female rather short, cephalic femora very slightly longer than the mesonotum, basal flexure pronounced, cephalic tibiae slightly longer than the femora; median femora moderately robust, about equal to the mesonotum, with the median segment, in length, subapical spine prominent, but smaller than in the male, ventral carinae serrato-dentate, median tibiae slightly longer than the femora; caudal femora reaching to the middle of the fourth abdominal segment, subapical spine similar to that of the median limbs, caudal tibiae longer than the femora.

General color of the male buff-yellow becoming vinaceous-rufous on the abdomen; antennae madder becoming blackish-brown distad; eyes tawny lined with vandyke brown. General color of the female bister becoming ashy and french gray on the limbs; antennae similar to those of the male but duller.



Fig. 9.—*Diapheromera* (*Ceratites*) *covilleae* n. sp. Lateral view of subgenital opercle of male type. ($\times 4$.)

Measurements.

	♂	♀
Length of body,	81 mm.	92 mm.
Length of pronotum,	3.6 "	5 "
Length of mesonotum,	17.6 "	19.4 "
Length of metanotum (including median segment),	17 "	15 "
Length of cephalic femur,	23 "	20.5 "
Length of median femur,	15.2 "	14.7 "
Length of caudal femur,	21.5 "	19 "

The male type is the only specimen of that sex seen by us. One paratypic adult female, taken July 9, and two adult females taken July 10 on the greasewood growth on the mesa at the east foot of the Franklin Mountains, have been examined. A series of twelve immature female specimens in about five different stages of growth are now before us. These individuals are all from the Franklin Mountains and mesa at the base of the same, July 9–11, except two from near Alamogordo, one taken April 23, 1902, by Viereck and Rehn, the other in the adjacent Dry Canyon, July 13, by Hebard and Rehn. All the stages but one are represented in the material taken July 9–11, the April specimen being smaller than any of the others. The half developed individuals show an interesting protective color adaptation, the base color being apple or oil green with the abdomen and limbs annulate with olive, the result being a color scheme blending wonderfully with the peculiar joint-like terminal twigs of the greasewood on

which the species is found and feeds. As individuals near maturity this color pattern is lost, the dull coloration of the female type supplanting it. The two mesa adults have the hoary suffusion much stronger and more extensive than in the female type, the limbs and the greater portion of the body being much lighter than in the type. The cephalic horns are well indicated in all the immature specimens.

A series of seven females from Pecos, Reeves County, Texas, in the Academy collection are referred to this species, although rather smaller and slenderer, the latter difference probably being due to the fact that all have been immersed for some time in a liquid preservative and in consequence there has been considerable shrivelling. The essential characters, *i.e.*, width of head, horns and form of femoral spines and apex of abdomen, are the same as in the El Paso specimens.

ACRIDIDÆ.

TELMATETTIX Hancock.

Telmatettix aztecus (Saussure).

In a canyon in the Florida Mountains, at about 5,100 feet elevation, along a little rill of water which trickled a few dozen yards over a rock slope and thin top soil, this species was found quite plentiful on July 19. Specimens were noticed only on such spots as had been moistened by the water, a series of fourteen males and eleven females being taken in a short time. The insects were active and flew rapidly about when disturbed. There is a considerable range of color variation in the lot, many shades of browns and grays being represented, with several decidedly rufous individuals, and a number with complete or incomplete "saddle" of blackish brown caudad of the broadest portion of the pronotum. In one specimen the cephalic and median limbs and the ventral margin of the lateral lobes of the pronotum are ringed or spotted with brilliant red. All the series have the pronotum elongate.

PARATETTIX Bolivar.

Paratettix mexicanus (Saussure).

A male of this species was taken on irrigated land along the Rio Grande, at El Paso, July 10, and a female was captured on cultivated ground at Albuquerque, September 14.

ACRYDIUM Geoffroy.

Acrydium crassum (Morse).

A single male of this species was taken at Cloudercroft, July 15, being beaten from vegetation on the steep hillside of James Canyon at an

elevation of about 8,800 feet. When compared with two male representatives of the species from near Manitou, Colorado, it is seen to differ only in the slightly more arcuate cephalic section of the median carina of the pronotum.

The only previous New Mexican record of the species was of its capture at Las Vegas, April 13.

***Acrydium incurvatum* (Hancock).**

A pair of this species, taken at Fort Wingate, April 23 and May 8, 1908, by John Woodgate, have been examined.

The only definite record from New Mexico published previous to this date was from 6,500 feet elevation on the Rio Ruidoso, White Mountains, Lincoln County, July 30. The species has been recorded from Washington and Colorado.

MERMIRIA Stål.

***Mermiria bivittata* (Serville).**

This widely distributed species is represented by a series of thirty-three specimens, taken at the following localities: Spofford, Kinney County, Texas, July 8 (one nymph); Johnstone, Valverde County, Texas, July 8 (one nymph); Seminole, Valverde County, Texas, July 8 (1 ♂); El Paso, July 10-11 (9 ♂, 2 ♀); Albuquerque, September 14 (12 ♂, 7 ♀). In size there is a very appreciable amount of variation, particularly in the male sex, while several types of coloration are easily recognized. The Albuquerque series is rather dull in color, with broad postocular bars which infringe on the dorsum of the pronotum in the male; the El Paso specimens represent two color types, one ochraceous with prominent postocular bars infringing on the dorsum of the pronotum and with a distinct or subobsolete median occipital stripe in the males, the other light greenish with the postocular bars narrower, limited to the lateral lobes and sharply defined, the occiput usually without a median line. The Seminole male belongs to the first type mentioned from El Paso. The pale subcostal streak is present on the tegmina of all the series, though varying somewhat in intensity and also in color, ranging from white to bright green. The form of the fastigium and of the rostrum when seen from the lateral aspect is subject to considerable variation, the latter particularly exhibiting a surprising range, from a type with the facial line regular from the fastigio-facial angle to the clypeal suture to one with a very evident though obtuse angle between the antennal bases. The Albuquerque series was taken on cultivated ground, while at El Paso the species was encountered among tornillo

bushes in irrigated ground along the Rio Grande. The Seminole specimen was taken from grass growing on a sandy spot.

***Mermiria texana* Bruner.**

This beautiful species is essentially one of the rough desert mountains and foothills, the altitude at which it occurs being between 4,000 and 5,500 feet. On the rugged slopes of the Franklin Mountains and their broken foothills three males and one immature female were captured on July 9, while on a rocky desert hill at Aden a pair were taken on July 21. An immature female from the lower slopes of the Florida Mountains, July 19, belongs to this species. A series of nine adult specimens of the species in the brown phase is now before us and surprisingly little difference in coloration is exhibited. Aside from the medio-longitudinal bar on the head and pronotum which is pale in one specimen, the only appreciable color variations are that the caudal tibiæ range from pale pinkish, through vermilion to solferino, and the antennæ are more obscure in some specimens than in others.

Individuals of the species are alert and quick to take wing, in fact this is one of the most difficult insects to capture among the Orthoptera of the Southwest.

PAROPOMALA Scudder.

In studying the series of *Paropomala* contained in the collection it was found necessary to critically examine the descriptions of all the species of the genus. Aside from the unique and little known *P. dissimilis* Bruner, the only species not easily located was *P. virgata* Scudder, very briefly described from Mesilla, New Mexico, between Gila Bend and Yuma, Arizona, Palm Springs, Cahon Pass, Lancaster and Kern City, California. In reply to a request for typical material of the species, Prof. Morse very kindly loaned us cotypes from all the typical localities, and on careful study it develops that at least two species are included in the series on which *virgata* was based. The Mesilla individuals belong to a short comparatively robust species found at several localities in the Rio Grande valley, while the southern Californian and Arizonan individuals belong to the species later called *pallida* by Bruner. One cotype from Kern City may be distinct from *pallida* of the Mohave, Colorado and Gila desert regions, having the fastigium very broad and the pronotum narrower than usual, but without additional material its separation does not seem warranted, inasmuch as forty-nine specimens of the species from Arizona, California and Nevada exhibit a great amount of individual variation.

As no single type or pair of types of *virgata* was originally designated, and the original diagnosis being too brief to give any assistance, the selection as typical *virgata* of either species known to exist in the type series is open to us, and in view of Mesilla, New Mexico, standing first in the list of localities the Rio Grande form is here selected as true *Paropomala virgata*.

To assist in the work of determination a key to the species in hand was constructed which is here reproduced to aid future workers. As stated above all the species have been examined except *P. dissimilis* Bruner.

- A.—Tegmina not reaching tip of abdomen or even tip of caudal femora; subgenital plate of male elongate, half as long again as the last ventral segment.
- B.—Antennæ of female as long as the caudal femora; eyes smaller, the interocular space in the male decidedly more than half the length from that region to the apex of the fastigium; caudal femora longer, *wyomingensis* (Thom.) [*cylindrica* Bruner].
- BB.—Antennæ of female shorter than the caudal femora; eyes larger, the interocular space in the male less than half the length from that region to the apex of the fastigium; caudal femora shorter, *calamus* Scudd.
- AA.—Tegmina surpassing the tips of the caudal femora, generally reaching the apex of the abdomen and in some cases surpassing it. Subgenital plate of male (at least in the species where known) not very long, hardly longer than the last ventral segment.
- B.—Form rather slender or moderately robust (for the genus), slightly compressed; head moderately produced.
- C.—Tegmina of male not exceeding the apex of the abdomen; occiput more or less appreciably inflated; caudal limbs rather slender; cerci styliiform, comparatively slender.
- D.—Size larger (body of male 18.5–24 mm., of female 27–36.5 mm.); antennæ more depressed proportionately; caudal margin of the disk of the pronotum arcuate; metazona more than two-thirds the length of the prozona, *pallida* Bruner.
- DD.—Size smaller (body of male 16 mm.); antennæ less depressed proportionately; caudal margin of the disk of the pronotum very bluntly obtuse-angulate; metazona two-thirds the length of the prozona, . . . *perpallida* Rehn and Hebard.
- CC.—Tegmina of male exceeding the apex of the abdomen; occiput not appreciably inflated; caudal limbs proportionately more robust; cerci styliiform, moderately robust, *virgata* Scudder.

BB.—Form very slender, considerably compressed; head strongly produced. (Size rather small, ♂ 18–21 mm., ♀ 26–27.5 mm.), *acris* Rehn and Hebard.

A single imperfect specimen from Lathrop, California, seems to indicate the presence of a quite distinct species in the San Joaquin valley.

***Paropomala calamus* Scudder.**

Rather unexpectedly this species was encountered at three places in or adjacent to the Rio Grande valley. On the bare desert slopes of the Franklin Mountains at El Paso a single immature specimen was taken on July 9 at an elevation of 4,500 feet; a series of six adult and five immature males and nine immature females was taken at Aden, July 21, while one adult male and two adult females were taken at Albuquerque on September 14 in dry grass. At Aden the species was taken chiefly in grass prairie land, where it was found clinging tightly to blades of grass, while at Albuquerque it was found in the river bottom-land. The immature specimens from Aden represent three stages of growth.

As no measurements have been published for this species the following may prove of service:

	♂		♀	
	Albuquerque.	Aden.	Albuquerque.	
Length of body,	22 mm.	25.5 mm.	30	mm.
Length of head,	3.4 "	4 "	4.7	"
Length of pronotum,	3 "	3.4 "	4	"
Length of tegmen,	8 "	13.3 "	10	"
Length of caudal femur,	9 "	10.3 "	11.3	"

The specimens from Albuquerque are all in the green phase, while the Aden series and the Franklin Mountains specimen are in the pale brownish and hoary white phase. The adult males from Aden and nearly half the immature series have the hoary white suffusion very strongly marked, usually covering the head, pronotum, pleura and caudal femora.

The only previous record of this species is that of the types from Lancaster, California, in the Mohave desert.

***Paropomala virgata* Scudder.**

This species appears to be one restricted to the eastern side of the continental divide, the only exact records being from the Rio Grande valley and the region adjacent to it. At El Paso a series of seven males and one female was taken July 10–11 on irrigated land along the Rio Grande and in dry grass in sand near the edge of the mesa.

A single male was taken in dry grass at Aden, July 21, while at Albuquerque, September 14, a series of thirteen females was taken in dry grass and on cultivated ground, chiefly on the latter. In size there is a slight amount of variation, but not enough to cause any difficulty in recognizing the species. An average pair measure as follows:

	♂ El Paso.	♀ Albuquerque.
Length of body,	17.3 mm.	24 mm.
Length of head,	3 "	4 "
Length of pronotum,	3 "	4 "
Length of tegmen,	13 "	17 "
Length of caudal femur,	9.5 "	12.7 "

In coloration the species appears to be quite uniform, although the Albuquerque series is darker than the individuals from the El Pasan region, all examined being in a buff and brown phase except one Albuquerque specimen which demonstrates the existence of a green phase.

The comparatively robust build of the species, particularly of the females, will readily serve to differentiate it from its allies.

The only positive records for the species aside from those given here are from the vicinity of Mesilla and Las Cruces, Donna Ana County, New Mexico.

Paropomala acris Rehn and Hebard.

This species, which was described from Railroad Pass, Cochise County, Arizona, was found to be fairly numerous at Aden, July 21, chiefly in grass prairie land, a series of eight adult and two immature males and two adult and three immature females being taken. A pair was also taken at El Paso: the male, July 11, clinging to a thorn of a mesquite near the edge of the mesa; the female, July 10, on prickly pear (*Opuntia* sp.) in the greasewood belt at the east base of the Franklin Mountains.

The El Paso male is of nearly the same size as the type, but all the Aden males are smaller. This difference in specimens from the two localities holds true in the female sex, the two Aden specimens of that sex being uniform in size and both smaller than the El Paso individual. The following measurements may be of interest.

	♂ El Paso.	♂ Aden.	♀ El Paso.	♀ Aden.
Length of body,	21 mm.	18.5 mm.	30.5 mm.	28 mm.
Length of head,	3.5 "	3.5 "	5 "	4.5 "
Length of pronotum,	3.2 "	2.8 "	5 "	4.7 "
Length of tegmen,	15 "	13 "	21.5 "	19.5 "
Length of caudal femur,	10.2 "	9 "	13.5 "	13.5 "

The majority of the Aden series is more grayish ochraceous than the type, the remainder being very similar to the Railroad Pass individual. The El Paso male is greenish yellow dorsad, while the female from the same locality is decidedly green with the tegmina roseate.

The only localities from which the species is known are those recorded here and the type locality—Railroad Pass, Arizona.

SYRBULA Stål.

Syrbula admirabilis (Uhler).

A single male taken July 8 at Johnstone, Valverde County, Texas, belongs to this species.

Syrbula fuscovittata Thomas.

A mature male and an immature female taken in Dry Canyon, Sacramento Mountains, July 13, and an adult female taken at 4,500 feet elevation in the Franklin Mountains, July 9, are referable to this species. Both adult specimens are in the brown phase of coloration. The male from Dry Canyon was taken at an elevation of about 5,000 feet, in the lower portion of the juniper and piñon zone.

BOÖTETTIX Bruner.

Boötettix argentatus Bruner.

This interesting grasshopper, which seems never to leave the branches of the greasewood (*Covillea tridentata*), was taken, July 9 to 11, at a number of points in the greasewood belt on the mesa northeast of El Paso and on the lower slopes of the Franklin Mountains. The series from the El Pasan region, numbering twenty-four males, fourteen females and eight nymphs, and two females and one nymph taken July 13 in the greasewood of the lower portion of Dry Canyon, Sacramento Mountains (elevation 4,800–4,900 feet), and the growth of the same shrub on the alluvial slope at the mouth of the same canyon, exhibits a very considerable amount of variation in size, the extremes of each sex being as follows:

	♂	♂	♀	♀
Length of body, . . .	17 mm.	21.2 mm.	20.5 mm.	25.5 mm.
Length of tegmen, . .	14 “	19 “	16.8 “	20 “
Length of caudal femur,	9.5 “	12 “	12 “	13.2 “

In color numerous little variations are noticeable, none, however, important enough to call for special note. In all the series the tegmina are more or less strongly maculate, although the markings are limited in the majority of the specimens to the vicinity of the anal area. The

striking pearl markings on the pronotum, pleura and limbs are present in all the specimens, even in those in the immature condition, the brilliancy of these markings in the living insect being retained by a good proportion of the series.

The stridulation of *Boötettix* is a faint buzzing *szszszsz* terminated by a distinct whirr and repeated at intervals.

ERITETTIX Bruner.

Eritettix variabilis Bruner.

A single female of this species was taken at Cloudercroft, July 14, and eleven males were collected at Aden, July 21. At Cloudercroft it was taken in a mountain meadow, while at Aden the males were all collected among a scant covering of desert plants on the rocky hillside. As in the case of the other species of this genus, these individuals were found to be extremely active.

The males show a considerable amount of variation in size, but are rather uniform in coloration. However, none of the males have their color pattern as contrasted as the female, this being chiefly due to the uniform dorsal color of the males, the female having the pair of blackish dorsal lines quite distinct. The supplementary dorsal carinae of the pronotum are rather well marked over the whole dorsum of the pronotum in some males, indicated only on the metazona in others and entirely absent in a few, while the female possesses weakly developed ones.

This species has previously been recorded from Silver City, Grant County, and La Trementina, San Miguel County, New Mexico, and Douglas, Cochise County, Arizona.

OPEIA McNeill.

Opeia imperfecta Bruner.

During brief train stops made on July 8 at Dunlay, Medina County, and Spofford, Kinney County, Texas, this species was captured in a grassy spot under mesquite trees at the former locality and in dry grass at the latter. A single male was taken at Dunlay and four of each sex were collected at Spofford.

These specimens demonstrate the unreliability of the length of the tegmina and the form of the apex of the same as specific characters in this genus. The typical specimens examined by Bruner all possessed rather abbreviate tegmina, "about one-half (♀) or nearly three-fourths (♂) as long as the abdomen, their apices pointed or acuminate." In every character and every proportion the Dunlay and Spofford individuals fully agree with the original description, except

that the males have the tegmina reaching or slightly exceeding the apex of the abdomen, while the females possess tegmina much over half as long as the abdomen, in all of that sex failing to reach the apices of the caudal femora by less than the length of the pronotum. The apices of the tegmina are more or less narrowly rounded in all the specimens. On examining a number of representatives of the Great Plains *O. obscura*, which it may be added has a considerable amount of variation in the tegminal length, it is noticed that individuals with rather short tegmina have the tips of the same pointed, while those with longer tegmina have the same portions rounded. This is true of almost all of a number of individuals of the species, and no doubt explains the presence of rounded apices to the tegmina in the long-winged Spofford and Dunlay individuals.

To the characters given by Bruner for separating *Opeia imperfecta* from *O. obscura* might be added the less inflated character of the head in *imperfecta* with the resultant straighter and less arcuate occiput.

This species was described from southwestern Texas and Jimulco and Comancho, Zacatecas, Mexico.

AMPHITORNUS McNeill.

Amphitornus ornatus McNeill.

On a desert hillside and on grassy prairie at Aden this species was found rather numerous on July 21, three individuals of each sex being taken. At an elevation of 5,300 feet in the piñon and juniper zone of Dry Canyon, Sacramento Mountains, a single male was taken, July 13, on bare ground among low bushes on the steep canyon wall. At both localities the species was found to be exceedingly wary and difficult to capture. The only previous New Mexican record of the species was of its capture at Little Mountain, east of Mesilla Park, Donna Ana County, on July 1.

CORDILLACRIS Rehn.

Cordillacris occipitalis (Thomas).

On the grassy rolling prairie at Aden this species was found fairly plentiful on July 21, a series of fifteen males and ten females being taken. A female of the species was also taken during a train stop at Faywood, Luna County, New Mexico, on July 20.

An appreciable amount of variation in size is noticeable in both sexes, but particularly in the male, while the general tone of the basic coloration varies from a predominating ochre type to one with gray-brown the main element, with, however, one specimen decidedly brick red in general tone.

The only previous record of this species in New Mexico is of its occurrence in Johnson's Basin, Socorro County, where it was taken, June 22, by Townsend. The record of its occurrence at Alamogordo, New Mexico, made by Rehn,⁹ should be corrected, as a re-examination of the individual there recorded shows it to be the very closely allied *C. cinerea*.

***Cordillacris cinerea* (Bruner).**

Two females, one taken at Aden, July 21, on grassy prairie, and the other from prickly pear (*Opuntia* sp.) growing on the greasewood covered mesa northeast of El Paso, July 10, are referred to this species. These specimens are very close to *C. occipitalis*, but seem to be separable from the specimens of the latter by the more protuberant eyes, the narrower fastigium and the more constricted interocular space. However, there is a great amount of variation along these lines in specimens of undoubted *occipitalis*, and an examination of the type material of the species may show no valid grounds for retaining *cinerea* as distinct from *occipitalis*. The color character given by Bruner¹⁰ to separate the two species does not appear to be of value, as specimens of *occipitalis* have the caudal tibiae various shades of testaceous as well as "in part red or reddish." This form has been recorded with some query as to the species from sandhills near Mesilla, New Mexico, June 27-30 and Sierra Blanca, Texas, June 26, while material from Alamogordo, New Mexico, April 9, belongs to this type.

***Cordillacris apache* n. sp.**

Types: ♂ and ♀; Silver City, Grant County, New Mexico. July 20, 1907. (Hebard and Rehn.) [Hebard Collection.]

Related to *C. crenulata* (Bruner) and *C. pima* Rehn, differing from the former in the narrower ventral portion of the head, more retreating facial line, narrower interspace between the eyes, narrower tegmina and slightly more elongate caudal limbs; from *C. pima* it differs in the shorter caudal limbs, in the more constricted lateral carinae of the pronotum and in the rectangulate angle of the fastigium in the female sex.

In determining the series representing this species it was found absolutely necessary to ascertain what true *C. crenulata* was, the original description of the latter species hardly being explicit enough to place the name on the northern form (Montana to Colorado) or the new one, the difficulty being further augmented by the fact that Bruner

⁹ *Proc. Acad. Nat. Sci. Phila.*, 1902, p. 718.

¹⁰ *Biol. Cent. Amer.*, Orth., II, p. 70.

originally placed Silver City among his localities for *crenulata*. The description of *crenulata* was dissected and tabulated in parallel columns of agreement with the two species in hand, but no definite conclusion could be reached, so in response to an inquiry Prof. Bruner wrote as follows: "The insect called *Cordillacris crenulata* was described chiefly from west Nebraska specimens, although I had at the time other specimens from New Mexico in my collection." In view of this statement it seems perfectly legitimate to consider the northern form, which we have before us from McCook and Sioux Counties, Nebraska, and Antonito, Rocky Ford, Colorado Springs and Fort Collins, Colorado, as the true *crenulata*.

Size medium; form rather similar to that of *C. crenulata*. Head with its dorsal length subequal to that of the pronotum, moderately but regularly ascending to the fastigium when seen from the side, the fastigium slightly descending; interocular region very slightly (♂) or not at all (♀) narrower than one of the eyes; fastigium with the apical angle rectangulate in both sexes, the disk very slightly depressed immediately caudad of the margin; fastigio-facial angle subrectangulate when seen from the side, face greatly (♂) or considerably (♀) retreating; ventral portion of the head moderately inflated, not at all (♂) or slightly (♀) broader than the

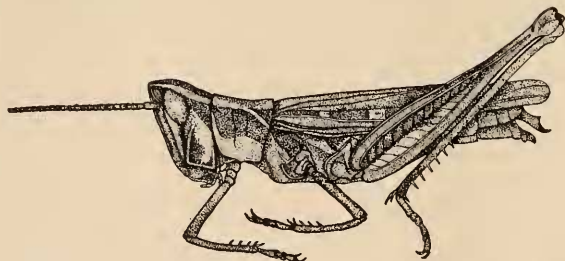


Fig. 10.—*Cordillacris apache* n. sp. Lateral view of female type. ($\times 3$.)

width across the eyes; frontal costa very narrow and subequal dorsad, regularly and considerably expanding ventrad of the antennae, sulcation deep dorsad, being very shallow and subobsolete ventrad. Eyes subovate (♂) or subtrigonal-ovate (♀) in outline, moderately prominent in both sexes when seen from the dorsum, the length subequal to (♀) or very slightly exceeding (♂) the infra-ocular sulcus; antennae slightly (♂) or considerably (♀) exceeding the length of the head and pronotum together, slightly depressed, with a slight ensiform tendency in the female, apex rather blunt. Pronotum very slightly sellate; cephalic margin of the dorsum slightly emarginate truncate, caudal margin slightly arcuate (♂) or arcuato-truncate (♀); median carina low and weak, most ap-

parent caudad, severed distinctly caudad of the middle; lateral carinae regularly but not greatly converging caudad to the middle of the disk, where they are separated by about half the caudal width, thence more sharply divergent caudad; lateral lobes slightly longer than deep, ventral margin sinuate arcuato-truncate, ventro-cephalic angle rounded, ventro-caudal angle subrectangulate. Tegmina rather narrow, slightly (♀) or considerably (♂) exceeding the apex of the abdomen, but not quite reaching the extremities of the caudal femora, apex narrowly truncate. Interspace between the mesosternal lobes transverse; interspace between the metasternal lobes longitudinal (♂) or subquadrate (♀). Cephalic and median limbs quite slender, moderately long. Caudal femora in length slightly shorter than the tegmina, slender; caudal tibiae about equal to the femora in length, armed with ten to twelve spines.



Fig. 11. — *Cordillacris apache* n. sp.
Dorsal view of
head and pronotum. (× 3.)

General color ochraceous marked with vandyke brown. Face and mouth parts buff, the frontal costa clay color and a distinct subocular blotch, which is divided by a carinal line of buff, vandyke brown. Genæ, portions of the pleura and the ventral portion of the lateral face of the caudal femora hoary white; ventral portion of the lateral lobes of the pronotum pale buff (♀) or buffy white (♂). Eyes ochraceous lined with narrow bars of vandyke brown; antennae very pale bluish-green, narrowly tipped with buffy, whitish proximad in the female. Postocular bars and their continuations on the lateral lobes and pleura vandyke brown; a distinct broad median bar is present on the dorsum of the head. Dorsum of the pronotum with buff predominating, the median area somewhat infuscated, the usual trigonal caudal blotches vandyke brown. Tegmina with the crenulate maculations of dull whitish against vandyke brown, the crenulations more numerous in the male than in the female. Caudal femora with the dorsal portion of their lateral face vandyke brown, the dorsum with three indistinct vandyke brown bands, of which the proximal is suboblique; caudal tibiae dull lavender distad and mesad, spine tipped with black.

Measurements.

	♂	♀
Length of body,	13 mm.	18 mm.
Length of pronotum,	2 "	2.8 "
Length of tegmen,	9.8 "	13 "
Length of caudal femur,	8.9 "	11.5 "

In addition to the types a series of six adult males, six adult females and one female nymph have been examined. Of this representation four males, two females and the nymph are from Silver City, July 20; two males and two females from Aden, July 21; one female from the Florida Mountains, July 19, and one female from Spalding, Luna County, New Mexico, July 20.

In size the specimens are moderately uniform, one or more females being slightly larger than the type, while one male is somewhat smaller than the type of that sex. The coloration exhibits some little variation, but such differences as are seen are chiefly due to intensification or lightening of the general pattern and shades. The antennæ in some specimens are buffy proximad.

The habitat of this species at Aden was found to be a grassy rolling prairie, dotted with an extremely scanty and widely scattered growth of very low mesquite and a few sotols (*Dasyllirion* sp.). The insects were found most plentiful where the grass was most abundant. At Silver City specimens were found in numbers among short grasses on the hillsides.

PHLIBOSTROMA Scudder.

Phlibostroma quadrimaculatum (Thomas).

An immature specimen of this species was taken at Silver City, July 20, in a small patch of short grass.

This is the first definite record of the species from southern New Mexico.

ORPHULELLA Giglio-Tos.

Orphulella picturata Scudder.

A single male of this species was taken at Dunlay, Medina County Texas, during a train stop on July 8. This specimen was found in the same surroundings as *Opeia testacea*.

Orphulella pelidna (Burmeister).

A male and two females of this species were taken on cultivated ground at Albuquerque, September 14. The male and one female are in the brown phase, the remaining female being of the green type. Comparison was made with individuals of the species from Nebraska.

The only previous New Mexican records are of captures of the species at Albuquerque and Mesilla.

DICHROMORPHA Morse.

Dichromorpha viridis (Scudder).

At San Antonio, Texas, July 8, a single female of this species was taken on a lot near the railroad station.

CHLOEALTIS Harris.**Chloealtis abdominalis** (Thomas).

On the edge of a field flanked by a forest of Douglas fir (*Pseudotsuga mucronata*) at Clouderoft, one adult male and seven immature specimens of this species were taken on July 14. The adult specimen was located by his stridulation, although it was in the middle of the afternoon. The note of this insect was like that of individuals of the same species heard in Michigan.

When compared with a series of males of the species from Pequaming, Michigan, Yellowstone Park, and Manitou, Colorado, the Clouderoft specimen is seen to be appreciably smaller, the measurements being as follows: Length of body, 15.7 mm.; length of pronotum, 3.3 mm.; length of tegmen, 8.8 mm.; length of caudal femur, 11.2 mm.

The previous records of this species in New Mexico are from Beulah, San Miguel County, and Truchas Peak, Rio Arriba-Mora Counties.

CHORTHIPPUS Fieber.**Chorthippus curtippennis** (Harris).

One male and two females of this species were collected at Clouderoft on July 14 and 15. These specimens were taken in damp grassy situations, the species being by no means common.

Beulah, San Miguel County, and Aqua Fria Park, Colfax County, are the previously known New Mexican localities for the species.

GOMPHOCERUS Thunberg.**Gomphocerus clavatus** Thomas.

At Clouderoft this species was found to be abundant in grassy mountain meadows, particularly along the edges of the forest. Here a series of fifteen males and sixteen females were taken on July 14 and 15. It was noticed that the species was very hard to find before ten o'clock in the morning, although quite abundant during the heat of the afternoon.

The series is quite uniform in size, but in color there is in a number of specimens a pronounced mixing and lining with shades of brown and ochre which is not seen in the other more uniformly colored individuals. This variable tendency is more apparent in the female sex. None of the individuals from Clouderoft present areas or even traces of green in their coloration. A single female from Truchas Peak, New Mexico, taken August 2, 1902, by W. P. Cockerell, examined in this connection, has considerable green in its coloration. The previous exact New Mexican records for the species were from Clouderoft and above timber-line, 13,000-14,000 feet, on Truchas Peak.

PSOLOESSA Seudder.***Psoloessa texana*** Seudder.

If further evidence is needed to support the opinion recently expressed by the authors (*Proc. Acad. Nat. Sci. Phila.*, 1908, pp. 381-383) regarding the impossibility of differentiating the four nominal species of the genus *Psoloessa*, the one hundred and forty-three specimens examined in this connection furnishes it. The data here given on the variability in this species should be considered supplementary to that presented in the paper mentioned above.

The typical *buddiana* type is represented by four specimens, typical *ferruginea* by nine, typical *maculipennis* by eleven and typical *texana* by eight, a total of twenty-three per cent. of the series, leaving an intermediate series of one hundred and eleven specimens or seventy-seven per cent., divided as follows;

- A.—Sharing characters of *buddiana* and *ferruginea*, one individual.
- B.—Sharing characters of *buddiana* and *maculipennis*, forty-seven individuals.
- C.—Sharing characters of *ferruginea* and *maculipennis*, fifty-three individuals.
- D.—Sharing characters of *maculipennis* and *texana*, four individuals.
- E.—Sharing characters of *ferruginea* and *texana*, one individual.
- F.—Sharing characters of *buddiana*, *ferruginea* and *maculipennis*, five individuals.

The distribution by localities of the specimens representing the types of the four "species" and the intermediate groups is as follows:

	El Paso.	Franklin Mts.	Alamogordo.	Dry Canyon.	Aden.	Denning.	Florida Mts.	Silver City.
Typical <i>buddiana</i>		*			*			*
Typical <i>ferruginea</i>		*			*	*		*
Typical <i>maculipennis</i>	*	*	*		*	*	*	*
Typical <i>texana</i>	*		*		*	*		*
A intermediate.....	*	*	*	*	*	*	*	*
B ".....	*	*	*	*	*	*	*	*
C ".....	*	*	*	*	*	*	*	*
D ".....			*		*		*	*
E ".....					*			*
F ".....	*	*						*

El Paso is represented by nine ♂, ten ♀, July 10 and 11; slopes of the Franklin Mountains by six ♂, seven ♀, July 9; Alamogordo by two ♂, four ♀, July 13; Dry Canyon, Sacramento Mountains, two ♂,

three ♀, July 13; Deming, two ♂, four ♀, July 18; Florida Mountains, two ♂, two ♀, July 19; Aden, twenty-six ♂, thirty-eight ♀, July 21; Silver City, nineteen ♂, seven ♀, July 20. At El Paso, Alamogordo and at the foot of the Florida Mountains it was taken from the bare ground in greasewood (*Covillea*) areas, while in Dry Canyon, in the Franklin and Florida Mountains, and at Silver City it was taken from canyon and hill slopes usually covered with low vegetation. At Aden the species frequented a variety of habitats, being taken on a rocky hillside, in grass prairie land and from areas of dry grass in sand, being most abundant in the latter situation, while at Deming it was taken on the rabbit-weed and mesquite plain.

STIRAPLEURA¹¹ Scudder.

Stirapleura pusilla Scudder.

A series of thirty males and thirteen females are referred to this species, which seems to present quite a little variation in minor structural characters and size and to a considerable extent in color. Five males and four females were taken at Silver City, July 20, on rough slopes, the remainder of the series, twenty-five males and nine females, being from Aden, July 21, where the species was found in all the three types of surroundings examined, but was noted in greatest numbers in grass prairie. The Silver City specimens are smaller than the Aden individuals, although both series average larger than the original measurements. The proportions of an average pair from each locality are as follows:

	Silver City. ♂	Aden. ♂	Silver City. ♀	Aden. ♀
Length of body, . . .	12.8 mm.	15.5 mm.	19 mm.	21 mm.
Length of pronotum . . .	2.9 "	3.1 "	3.4 "	4 "
Length of tegmen, . . .	14.1 "	14.8 "	17 "	18.7 "
Length of caudal femur,	10 "	11.2 "	12.5 "	14 "

AGENEOTETTIX McNeill.

Ageneotettix deorum (Scudder).

At Aden, July 21, this species was found in grassy prairie land, on a rocky hillside and in a patch of dry grass along the railroad track, a series of thirteen males, one female and seven nymphs being taken.

¹¹ *Stirapleura mesalero* Rehn (*Proc. Acad. Nat. Sci. Phila.*, 1902, p. 719) is seen on re-examination of the type and comparison with material now in hand to be *Psoloessa texana* Scudder. The original reference to *Stirapleura* was caused by the degree of dorsal visibility of the lateral foveolæ, a character which appears to us to be almost worthless for separating the two genera, depending as it does on the angle from which the head is viewed.

At Silver City, July 20, a single male was taken, while one male and three females were secured at Albuquerque, September 14.

The Albuquerque individuals are quite dull colored, with, however, a longitudinal line present on the costal areas of the tegmina in three of the four specimens.

This species has previously been recorded from Mesilla Park and Chaves, New Mexico.

AULOCARA Seudder.

Aulocara rufum Seudder.

A single freshly moulted female of this species was taken at Silver City, July 20. It is rather dull in color, somewhat resembling specimens from Antonito and Nephista, Colorado, the head, pronotum, pleura and caudal femora being covered with numerous small blotches of olive green.

The only previous New Mexican record was La Cueva, Organ Mountains, September 3.

ARPHIA Stål.

Arphia luteola Seudder.

A single female taken at Spofford, Texas, July 8, belongs to this species. The disk of the wing is vermilion in color instead of yellowish, but there can be no doubt of the specific identity of the specimen.

Arphia areta Seudder.

A male and three females of this species, taken at Fort Wingate, McKinley County, New Mexico, by John Woodgate, have been examined. The dates represented are April 25, May 11 and August 20, 1908. The specimens have been compared with Beulah, New Mexico, and Jerome, Arizona, material. Three of the four individuals possess red or reddish wings.

Arphia teporata Seudder.

On the desert slopes of the Franklin Mountains near El Paso, at elevations of from 4,200 to 4,800 feet, this species was found generally distributed and a series of three males and four females were taken on July 9. Two males were also taken on the edge of the mesa near El Paso, July 11, while a single male was taken at 5,300 feet in the Florida Mountains and one female at Aden, July 21.

In the Florida Mountains but two specimens were seen, both in dense oak scrub near bare rock slopes, while at Aden a few were seen on the hill visited at that locality, but the species was very wary and difficult to collect.

CHORTOPHAGA Saussure.**Chortophaga viridifasciata** (De Geer).

A single female of this species was taken during a train stop at Converse, Bexar County, Texas, July 8.

ENCOPTOLOPHUS Scudder.**Encoptolophus coloradensis** Bruner.

A pair of this interesting species was taken in dry grass along the railroad tracks at Spofford, Kinney County, Texas, July 8. The species was somewhat plentiful and very swift of flight.

This is the first record of the species from Texas.

Encoptolophus texensis Bruner.

In suitable locations, such as irrigated and grass prairie land, through southern Arizona and New Mexico and western Texas, this species will no doubt be found in fair numbers.

In Texas, two males were collected at Spofford, July 8, while a series of thirteen males and eight females were taken, July 10-11, at El Paso, all except one from irrigated land. At Albuquerque three males and eleven females were secured, September 14, on irrigated land, while a single female was attracted to light at Deming, July 20. A pair were taken in grass prairie land at Aden, July 21, while a single female was taken in the greasewood belt at Alamogordo, July 13.

The specimen from Ysleta, El Paso County, Texas, recorded as *E. costalis*,¹² proves on re-examination to be *E. texensis*, which was undescribed when this record was published. A female specimen taken at Roswell, New Mexico (August, 1902, at light, T. D. A. Cockerell), shows the presence of the species a considerable distance up the Pecos Valley.

In size there is a considerable amount of individual variation, a number of specimens of each sex being both larger and smaller than the measurements given by Bruner. The dimensions of several of these specimens may be of interest.

	Albuquerque. ♂	El Paso. ♂	Albuquerque. ♀	El Paso. ♀
Length of body, .	16.5 mm.	22 mm.	23 mm.	26.8 mm.
Length of pronotum, .	3.3 "	4.8 "	4.2 "	5.6 "
Length of tegmen, .	16 "	20.2 "	20 "	25 "
Length of caudal femur, . . .	9.8 "	12.5 "	12 "	15. "

¹² Rehn, *Proc. Acad. Nat. Sci. Phila.*, 1902, p. 720.

Taking as units the two most extensive series here examined, the El Paso representation averages slightly larger than that from Albuquerque, but the variation within each is considerable.

All the specimens examined from Texas and New Mexico are in a brownish phase, no approach being noticed to the green phase. The Albuquerque and Deming specimens are quite grayish, the Alamogordo one reddish and the Spofford lot quite blackish, but the tegminal pattern is retained by all the individuals examined.

This species is now known from Carrizo Springs, Spofford, Ysleta and El Paso, Texas; Roswell, Alamogordo, Albuquerque, Mesilla, Aden and Deming, New Mexico; Tucson, Florence, Phoenix and San Bernardino Ranch, Arizona, and southern California.

In its actions this species is more active than *E. sordidus*, but much less so than *E. costalis*.

HIPPISCUS Saussure.

Hippiscus corallipes (Haldeman).

On the bare spots of an irrigated field along the Rio Grande below El Paso, two males and two females of this species were taken on July 11. At Aden, July 21, three of each sex were taken in all the situations found at that locality, but it was most commonly found in grass prairie land, where the species was very wary. All of the specimens have the internal faces of the caudal femora red or pinkish-red except the females from El Paso, one of which has the same areas deep blue, the other purplish.

Hippiscus cupidus Scudder.

Three males of this species have been examined from Fort Wingate, New Mexico, taken April 26, 1908, by John Woodgate. A comparison with males from Jerome, Arizona, reveals no differences worthy of mention.

The range of this species now extends from Jerome and Prescott, Arizona, to northwestern New Mexico. The record of *H. leprosus* from the Pinal Mountains, Arizona,¹³ belongs to this species.

Hippiscus affriktus Scudder.

A single female of this species was taken at Fort Wingate, New Mexico, June 2, 1908, by John Wingate.

The range of the species is extended considerably to the southward by this record, which is the first of the species from New Mexico; Rangely, on the lower White River, western Colorado, being the nearest locality from which it had previously been recorded.

¹³ *Canad. Entom.*, XXXIII, p. 102.

DISSOSTEIRA Scudder.

Dissosteira carolina (Linnæus).

Two females of this species were taken on cultivated ground at Albuquerque, September 14.

SPHARAGEMON Scudder.

Spharagemon collare (Scudder).

A pair of this species taken at Albuquerque, September 14, on irrigated land are in the collection. They are closer to race *angustipennis* than to the other forms of the species.

In this location this species was extremely difficult to capture, partially on account of its powerful flight and its extreme wariness. This is the only locality in New Mexico from which the species has been recorded.

TOMONOTUS Saussure.

Tomonotus aztecus Saussure.

Apparently this species is generally distributed over that portion of western Texas between San Antonio and the Pecos River, specimens before us being from Lacoste, Medina County (1 ♂), Hondo, Medina County (1 ♀), D'Hanis, Medina County (2 ♂, 2 ♀), Sabinal, Uvalde County (1 ♂), Spofford, Kinney County (2 ♂), and Samuels, Valverde County (2 ♀), all taken during train stops on July 8.

The Samuels specimens are quite pale, while two of the D'Hanis series are quite uniform blackish-gray. The Sabinal, Spofford and Hondo individuals are as a rule quite dark, the Sabinal and Hondo representatives with the tegminal markings distinct, while the Lacoste specimen tends toward ferruginous.

The senior author's *Lactista boscanus*¹⁴ from Ysleta, El Paso County, Texas, is referable to this species. As shown by Caudell¹⁵ the specimens recorded by Scudder and Cockerell as *Lactista pellepides* also belong to this form.

The range of this species in the United States is now known to extend from central Texas to south-central Arizona, north to the Organ Mountains of New Mexico.

MESTOBREGMA Scudder.

Mestobregma fuscifrons (Stål).

Five males and one female of this form were taken at Spofford, Texas, July 8; one male and two females also being taken at Dunlay, Medina County, Texas, the same date.

¹⁴ *Proc. Acad. Nat. Sci. Phila.*, 1902, p. 721.

¹⁵ *Proc. U. S. Nat. Mus.*, XXVIII, p. 469.

Mestobregma oblitterata Bruner.

A single female from Albuquerque, September 14, is referred to this species.

Mestobregma plattei (Thomas).

Three males and one female of this species were taken at Silver City, July 20; two females also being included in the series from the lower slopes of the Florida Mountains, taken July 19. At Silver City it was captured on low rounded hills, while in the Florida range it was found sparingly on bare precipitous rocks, where it was noticed to be very vigorous and wary.

These specimens show some approach to the closely allied *M. rubripenne* from southern Arizona, but the general coloration is nearer *plattei*, while the slender caudal femora are not at all like the comparatively robust ones of *rubripenne*.

The range of this species is now known to extend from Wyoming south along the eastern side of the Rocky Mountains to Colorado, occurring also at Magdalena, New Mexico, and the localities given above.

DEROTMEMA Scudder.**Derotmema laticinctum** Scudder.

This characteristic species of the desert regions of southern New Mexico and Arizona was captured at all the desert localities visited in southern New Mexico and at El Paso. In the vicinity of El Paso it was taken, July 10, 11 and 17, on irrigated land along the Rio Grande (1 ♂, 3 ♀), at the edge of the mesa, (1 ♂), in the greasewood belt (1 ♀), in bare desert east of city (2 ♂, 2 ♀), on desert hillside (2 ♂, 1 ♀), on sand with a sparse growth of dry grass (17 ♂, 8 ♀). At Alamogordo a single male was attracted to light, July 12; three males were collected in the rabbit-weed and mesquite plain around Deming, July 18; one male and two females secured at Silver City, July 20, and eight males and six females taken at Aden, July 21.

In the irrigated tract near El Paso the species was fairly common on the barer spots, usually in colonies, while at the foot of the mesa it was not common on pieces of bare ground. At Aden the species was found chiefly in grass prairie land, but in other situations as well, such as on cinders along the railroad track where it was inactive until the sun had warmed the ground, when the species became very active.

The El Paso specimens from sand area with dry grass are the largest of the species seen, a typical male and female measuring as follows:

	♂	♀
Length of body,	15.2 mm.	25.5 mm.
Length of pronotum,	3 "	4.8 "
Length of tegmen,	17.5 "	24.5 "
Length of caudal femur,	10.2 "	14.2 "

The Silver City male and the three individuals of that sex from Deming are quite small when compared with the El Paso series.

The series from sand areas at El Paso is uniformly more ashy gray than any other specimens of the species examined. The Aden series is quite dark when compared with the El Paso representation, while one female is strongly washed with rose red, particularly on the dorsum of the pronotum where the pink color is almost pure. The remarks previously made by the authors¹⁶ regarding the variability of the coloration of the anal area of the tegmen and of the fuscous bar of the wings in this species also apply to the series examined in this connection.

This is the first record of the species from the State of Texas.

TRIMEROTROPIS Stål.

Trimerotropis texana (Bruner).

This interesting species was taken at all the purely Lower Sonoran localities visited in southern New Mexico and extreme western Texas. At El Paso it was found, July 10 and 11, rather sparingly in the broken country at the foot of the mesa northeast of the city, on the bare spots in the greasewood-covered mesa and in a dry stream bed in the irrigated section along the Rio Grande, six males and one female being taken in the several situations. A single female was secured in the street under an arc light the evening of July 12 at Alamogordo, while one male was captured among greasewood at 4,900 feet elevation in Dry Canyon, Sacramento Mountains, July 13. At Aden, July 21, in grass prairie land and in dry grass, five males and three females were secured, while a single male was taken at Lanark, Donna Ana County, New Mexico, during a train stop on July 18. Three males and two females were secured in the yucca-dotted sand waste along the Mimbres River, north of Deming, July 18. This species was always found sparingly and specimens were invariably collected singly. Although much slower of flight than *T. vinculata*, this species has a peculiar habit of delaying its flight until the net had passed over it, making it more difficult to capture. Protective coloration appears to be a considerable factor in the life of individuals of this species, its habitat being the barest spots to be found in the region in which it occurs.

There is considerable variation in size, even in specimens from the same environment, and the coloration exhibits a tendency toward predominating grayish-white tones in one direction and reddish-ochraceous in the other. The specimen from Lanark is ochraceous-buff in the general tone of all except the tegmina. The caudal angle

¹⁶ *Proc. Acad. Nat. Sci. Phila.*, 1908, p. 388.

of the disk of the pronotum varies from acute to obtuse-angulate, though by far the greater majority of the specimens have it rectangular.

Previously known only from El Paso, Texas; Mesilla, Mesilla Park and the region about Las Cruces, New Mexico, this species is now known to range north in the Otero basin to at least as far as Alamogordo and west at least to Deming.

***Trimerotropis fasciula* McNeill.**

A pair of this species was taken at Albuquerque, September 14, while a single male was secured on the greasewood-covered mesa northeast of El Paso, July 10. The Albuquerque individuals were taken on dry ground near the river bottom. The tegminal bars are well defined in all three specimens.

***Trimerotropis modesta* Bruner.**

A single freshly transformed female taken on the edge of the mesa near El Paso, July 11, is referred tentatively to this species. On account of its condition the wing membranes are quite delicate and the coloration very weak, but it appears to represent this species, although considerably larger than the original measurements and the specimens available for comparison.

Length of body,	30.5 mm.
Length of pronotum,	7 "
Length of tegmen,	34 "
Length of caudal femur,	17 "

***Trimerotropis laticincta* Saussure.**

Of this rather striking species a single female was taken, July 11, at El Paso, and two males and one female at Deming, July 18. The El Paso individual was collected on the rough slopes at the foot of the mesa, while the Deming specimens were taken in the yucca-dotted sand waste along the dry bed of the Mimbres.

The wing-band in these specimens varies from a third to slightly more than a third the length of the wing. The ulnar spur is very short and sometimes hardly evident. The species is exceedingly vigorous and wary.

***Trimerotropis rubripes* Rehn.**

This interesting species, previously known only from the unique type from Albuquerque, is now known to range southward along the Rio Grande Valley to El Paso and also eastward and westward over a good portion of the Eastern or Chihuahuan Desert tract. Near El Paso the species was found sparingly on bare patches among low weeds

along the river bank in irrigated ground below the city. Here on July 10 and 11 four males and five females were taken. A single female was taken under a street arc light at Alamogordo, July 12, while one male was captured in grass prairie land at Aden, July 21.

This series is quite uniform in size. While but little color variation is noticeable, one female from El Paso is as reddish in general tone as the type, but all the other specimens are more grayish. There is some little variation in the intensity of the subobsolete tegminal bars, and the wing band also appears more blackish than the type.

***Trimerotropis vinculata* Seudder.**

At every locality visited in New Mexico and around El Paso this species was present. From an elevation of less than 1,000 feet at Spofford, Texas, to 8,700 feet at Cloudercroft, every locality yielded this form in greater or less abundance. The series of 112 specimens is distributed as follows: Spofford, Texas, July 8, 1 ♀; near Pecos High Bridge, Valverde County, Texas, July 8, 1 ♂; El Paso, July 10–11, 24 ♂, 15 ♀; Franklin Mountains, July 9, 7 ♂, 5 ♀; Alamogordo, July 12–13, 3 ♂, 1 ♀; Cloudercroft, July 14, 15, 4 ♂, 3 ♀; Aden, July 21, 27 ♂, 8 ♀; Deming, July 18, 1 ♀; Florida Mountains, July 19, 1 ♂, 1 ♀; Silver City, July 20, 3 ♂, 1 ♀; Albuquerque, September 14, 4 ♂, 2 ♀.

In the vicinity of El Paso, where the greatest variety of conditions was encountered, the species was found on the greasewood-covered mesa, the rugged slopes of the Franklin Mountains, the broken area at the foot of the mesa and on bare spots in the irrigated region along the Rio Grande. At Deming the mesquite and rabbit-weed plain harbored this species, while in the Florida Mountains it occurred on the rugged lower slopes. At Cloudercroft it was found uncommon in meadow land and along the edge of the conifer forest, while at Alamogordo it was found in the greasewood area east of the town and around arc lights at night. Cultivated ground was frequented at Albuquerque and rugged hillsides at Silver City, while all situations yielded it at Aden.

The majority of the El Paso specimens are slightly more grayish than the others in the series examined, the contrast of the tegminal bars being more decided, although this latter feature is so variable as to be worth nothing more than passing notice.

***Trimerotropis cyaneipennis* Bruner.**

On the very steep rocky slopes of the Florida Mountains this species occurred sparingly, two specimens, a male and female, being taken. It haunted the same jumble of boulders and precipitous exposures as *Mestobregma plattei* and was equally wary and vigorous. The male

has the tegminal bars strongly marked, much as found in individuals of that sex from the Huachuca Mountains, while the female is paler, but is similar to a specimen of that sex from the latter locality. A single female of this species was also taken on Grand View Point at Cloudercroft, July 16, while an individual of the same sex from Fort Wingate, New Mexico, taken August 16 by John Woodgate, has also been examined. The disk of the wing is very pale greenish-blue in the Cloudercroft male, glaucous blue in the Florida Mountains male, campanula blue in the Florida Mountains female.

This species is now known to occur in suitable surroundings in New Mexico, in the Organ Mountains at about 5,700 feet, at 8,000 feet in the White Mountains, at 5,400 feet in the Florida Mountains; in Arizona at Flagstaff, in the Grand Canyon from 3,000 to 7,000, in Oak Creek Canyon, at Prescott and in the Huachuca range.

CIRCOTETTIX Scudder.

Circotettix undulatus (Thomas).

It is very hard to understand Bruner's statement¹⁷ that "this locust is partial to bare, more or less alkaline ground, and for that reason is found throughout the more arid regions wherever suitable localities occur." Our experience with the species in Colorado, New Mexico and Arizona shows its range to be chiefly in the Transition, Canadian and Hudsonian zones, by no means in the "more arid" regions, frequenting often "slashings" or cut areas in the forest region still covered with the débris left by the lumberman. Here it delights in performing its interesting aerial dance, ascending as much as seventy feet in the air, and hovering there for some minutes, keeping up its continual clatter. Open hillsides in the park-like glade region of the higher ranges are much frequented by these insects, and when the sun has warmed them after the chill of the night they proceed with their regular clattering music.

At Cloudercroft, on July 14 and 15, this species was found numerous in several situations, the greatest number being taken on the hillside of James Canyon, where quite a colony was located and where their clatter was continuous. In all a series of ten males and eleven females was taken, comparatively little difference in size being exhibited by the sexes, although in color the males are more blackish than the females.

It is interesting to note that when a series of forty-nine specimens from Cloudercroft and Beulah, New Mexico, is compared with one of

¹⁷ *Biol. Cent.-Amer.*, Orth., II, p. 183.

seventeen from the Grand Canyon region, the New Mexican series is seen to have the caudal angle of the disk of the pronotum more acute in both sexes.

HADROTETTIX Scudder.

Hadrotettix trifasciatus (Say).

A single male of this species was secured on a rugged hillside near Silver City, July 20. It is a very small specimen.

ANCONIA Scudder.

Anconia cæruleipennis Bruner.

This most interesting species, which was described from a single female from Hawthorne, Nevada, is represented by two males and seven females from the vicinity of El Paso. When compared with the brief original description of the species the specimens agree fully, and as a series show no differences worth noting, except a lightening or darkening of the cinereous base color.

One of the rather striking features of this species is the subinflated disk of the prozona and metazona, while the principal sulcus is deeply impressed and the median carina elevated or subtectate on the cephalic portion of the prozona. The ease with which this species in life loses its caudal limbs is remarkable.

Two females were taken on the mesa at the east base of the south peak of the Franklin Mountains, July 9; one male and two females were taken along the edge of the mesa, July 11; while one male and three females were secured in the irrigated section along the Rio Grande on the same date.

HELIASTUS Saussure.

Heliastus aridus (Bruner).

This characteristic desert species was taken at El Paso, Alamogordo, Silver City and Deming, in all of which localities it was found on rocky areas or bare spots between the greasewood or mesquite bushes. At El Paso, July 9-11, it was taken on the mesa, the broken edge of the mesa and on the slopes of the Franklin Mountains, a series of fifteen males and fourteen females being collected. Three males were secured in suitable surroundings in the mesquite and rabbit-weed plain at Deming, July 18; a pair at Alamogordo, July 13, in the greasewood belt, and an immature female at Silver City, July 20.

The Deming individuals have hoary white very prominent in their coloration, while several of the El Paso series have a strong bluish-gray tendency.

PHRYNOTETTIX Glover.**Phrynotettix verruculatus** Uhler.

A single female which was taken on a bare spot of red earth in grass prairie land at Aden, July 21, belongs to this species. The coloration of the specimen resembles that of the surroundings in which it was taken. The specimen measures as follows: Length of body, 35 mm.; length of pronotum, 16; greatest dorsal width of pronotum, 11; exposed length of tegmen, 7; length of caudal femur, 16. One of the characters separating this species from *P. magnus* (Thomas) from southern Arizona is the more compressed and deeply sulcate inter-antennal portion of the frontal costa.

The records of this species are from the Pecos River in Texas or New Mexico; Las Cruces, La Cueva, Organ Mountains, Taos Valley and Aden, New Mexico, and Phoenix, Arizona.

Phrynotettix robustus (Bruner).

A single female of this species was collected on the summit of a boulder-covered hill at the foot of the mesa at El Paso, July 11. The specimen was squatted motionless on a large pebble like a toad.

This species is now known from localities in the Otero Basin (Alamogordo), Rio Grande Valley (El Paso, Las Cruces and Lake Valley) and Southwestern Arizona.

SCHISTOCEREA Stål.**Schistocerea alutacea** (Harris).

A single female from Albuquerque, taken September 14 in the cultivated section along the Rio Grande, is referred to this species. It has the caudal tibiae extremely dark and in this respect it approaches *S. obscura*, but on comparison with specimens of *S. alutacea*, *obscura* and *venusta* its most intimate relationship is seen to be with *alutacea*. The metazona is well supplied with fair-sized spots of yellowish, similar to those frequently noticed in *S. venusta* and more rarely in a weaker form in *S. alutacea*.

The previous New Mexican records of this species are from Las Cruces and the vicinity of Mesilla, its known distribution in the territory being in the bottom lands of a portion of the Rio Grande Valley.

Schistocerea shoshone (Thomas).

This powerful species was found at both El Paso and Albuquerque, two males and two females being taken at the former locality and four males and two females at the latter. At Albuquerque, September 14, the species was taken in the cultivated area along the river, while at El Paso one pair was taken from tall green weeds on irrigated land, July 11, and the other pair was captured, July 17, in the mesquite-dotted sand waste east of the town, in which latter situation the species was plentiful but very wary.

CAMPYLACANTHA Seudder.*Campylacantha lamprotata*¹⁸ n. sp.

Type: ♂; Hijito, Valverde County, Texas. July 8, 1907. (M. Hebard.)
[Hebard Collection.]

Related to *C. vegana* Seudder and Cockerell¹⁹ from Las Vegas, New Mexico, with a topotypic female of which it has been compared, but differing in the distinctly lanceolate tegmina, which are attingent and nearly twice as long as the dorsum of the pronotum, the more robust caudal femora, the substrangulate pronotum which has the caudal margin of the disk more decidedly angulate, the nearly straight ventral margin of the cerci and a number of features of the coloration.

Size medium; form moderately robust; surface of the pleura and metazona of the pronotum punctate, the greatest portion of the body covered with long whitish hairs. Head with the occiput arcuate, but hardly elevated dorsad of the level of the pronotum, the interocular

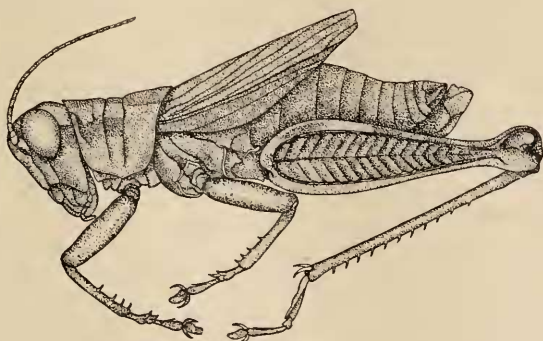


Fig. 12.—*Campylacantha lamprotata* n. sp. Lateral view of type. ($\times 3$.)

region and the fastigium rather strongly declivent; space between the eyes very slightly narrower than the inter-antennal portion of the frontal costa; fastigium of moderate width, rather shallowly but distinctly excavated, the margins distinct; frontal costa slightly expanded between the antennae otherwise subequal, biseriate punctate dorsad, distinctly sulcate ventrad of the ocellus; face appreciably retreating; eyes moderately prominent, ovate in outline, half again as long as the infraocular sulcus; antennae distinctly longer than the head and pronotum together, very slightly thickened distad. Pronotum with the greatest (caudal) width of the dorsum contained slightly more than one and one-half times in the length; cephalic margin of the disk slightly arcuate, caudal margin obtuse-angulate with the angle well

¹⁸ *Λαμπροτατα*, most brilliant.

¹⁹ *Proc. Davenport Acad. Sci.*, IX, p. 40.

rounded; prozona distinctly longer than the metazona, the former with a very weak median carina cephalad and the metazona with a very distinct but slightly elevated one; lateral lobes distinctly longer than deep, all the angles obtuse; transverse sulci of the whole pronotum well impressed. Tegmina hardly exceeding the head and pronotum in length, the greatest width slightly proximad of the middle, distal portion tapering, the apex narrowly oblique subtruncate; sutural margins overlapping. Wings equal to the tegmina in length. Prosternal spine strongly retrorse, conical, rather blunted; interspace between the mesosternal lobes decidedly longitudinal, the median



Fig. 13.—*Campylacantha lamprotata* n. sp. Lateral outline of apex of abdomen. ($\times 6$.)

width not a third the length of the same, the angles of the lobes well rounded; metasternal lobes attingent. Abdomen slightly compressed, carinate dorsad; furcula hardly indicated—mere broad areas with a hardly arcuate caudal margin; supra-anal plate slightly produced trigonal, apex very narrowly rounded, median sulcus indicated only on the proximal half, there deep and well impressed; cerci tapering in the proximal half, subequal distad and very

slightly wider than half the basal width, the ventral margin hardly arcuate, the apex subacute and not exceeding the apex of the supra-anal plate; subgenital plate moderately produced and acute when seen from the side, the subapical tubercle distinct. Cephalic and median femora considerably bowed and inflated. Caudal femora robust, the greatest width contained three and one-half times in the length of the same, the tips considerably exceeding the apex of the abdomen; caudal tibiae armed on the external margin with ten to eleven spines, on the internal with eleven.

General color pale apple-green, becoming yellowish on the pleura,



Fig. 14.—*Campylacantha lamprotata* n. sp. Dorsal outline of apex of abdomen. ($\times 6$.)

abdomen and venter, marked with bice-green. Face of the general color, the genæ slightly yellowish, while the occiput is pure lemon yellow, a distinct median occipital bar and much less distinct postocular bars bice green; eyes burnt umber; antennæ chinese orange, the two proximal joints greenish-yellow. Pronotum with the dorsum bice green, the lateral angles irregularly marked with dull lemon-yellow; the lateral lobes clouded with yellowish except for a clear bice green patch dorsad on the prozona. Tegmina bice green with yellowish-green veins.

Apex of the abdomen decidedly yellowish. Cephalic and median

femora pale chinese orange with a narrow distad area of bice green; cephalic and median tibiæ of the general color. Caudal femora of the general color, but rather more yellowish, having a number of bars of bice green, one imperfect proximal one hardly represented on the external face, one premedian, one postmedian and one apical (genicular), these being well indicated dorsad and less laterad, the ventral face uniform greenish-yellow, where the bars cross the lateral carinæ there is a tendency to glaucous, which is also found on the distal portion of the genicular region; caudal tibiæ glaucous blue with a poorly defined pale pregenicular annulus, spines very pale glaucous with black tips.

Measurements.

Length of body,	20	mm.
Length of pronotum,	4.8	"
Length of tegmen,	9	"
Length of caudal femur,	12	"

The type is the only specimen of this beautiful species seen by us, and was taken from a mesquite which had recently been drenched by heavy rain. No time was available for further search, as our stay was limited to a brief train stop.

HESPEROTETTIX Seudder.

Hesperotettix viridis (Thomas).

Of this beautiful species a series of seventy specimens is contained in the collection, of which fifty-three are males, twenty-two females and five immature individuals. The fondness of this species for the patches and larger areas of rabbit weed (*Isocoma heterophylla*) is very marked, and it usually occurs in abundance where that plant is present. Often in patches of this plant one would notice several specimens of this species sitting on the summit of a single clump.

At Deming it was very abundant on its food-plant on both sides of the dry bed of the Mimbres, a series of forty-five males, eighteen females and four nymphs being taken July 18. It also occurred in great numbers in suitable locations between the town and the Florida Mountains, while at 5,000 feet in a canyon in the Florida range it was very scarce, one male and two females being taken. At El Paso it was taken in the low country along the Rio Grande, four males and two females being secured on July 11. On the usual food-plant at Aden, July 21, one male and one female were taken, while one adult male and one nymph were collected at Silver City, July 20.

Of this large series thirty show no distinct blackish markings on or

in the transverse sulci of the dorsum of the pronotum, although these are strongly pencilled in others. Of the Deming series of sixty-three adults twenty-three are without the blackish pencilling. The Deming series also contains one specimen in a brownish phase, while four others from the same locality approach it more or less closely. The red pre-genicular annulus is present in every adult in the series, in by far the majority of the specimens very strongly indicated.

There is a considerable amount of individual variation in size, even in specimens from the same immediate locality, but even the largest specimens do not approach the robust, closely allied Mexican *H. meridionalis*. Several specimens from eastern Colorado (Lamar, Holly and Greeley), examined in connection with the New Mexican material, have the caudal femora very robust.

ÆOLOPLUS Seudder.

Æoloplus elegans Seudder.

This variable species, which at present is only known from localities in the Rio Grande Valley, was taken in numbers at El Paso, July 10, 11 and 17. It was found in greatest abundance in bottom land along the river, where it frequented the screw bean or tornillo (*Prosopis odorata*) and adjacent weedy areas, a series of sixteen males and nine females being taken. Along the edge of the mesa a single pair was taken, while the mesquite-covered sand desert east of the town furnished four males and one female.

In size there is a considerable amount of variation, so much so in fact that at first glance at a number of males of the species one would imagine they had two forms before them. This variation does not appear to be correlated with any particular environment or with the color phase of the individual. The extremes of the series measure as follows:

	♂	♂	♀	♀
Length of body	13.2 mm.	20 mm.	19.2 mm.	19.8 ²⁰ mm.
Length of pronotum,	3.5 "	5 "	5 "	5.2 "
Length of tegmen,	13 "	17.2 "	16.8 "	17.6 "
Length of caudal femur,	9 "	12 "	11.8 "	13.2 "

As shown by the above measurements the greatest amount of variation is exhibited by the male, although that noticed in the female is quite perceptible.

The form of the male cerci is rather variable, in many specimens these

²⁰ Abdomen compressed.

appendages being slenderer and not as robust distad as figured by Scudder, although the general form remains essentially the same. There is also a slight variation in the shape of the tubercle of the subgenital plate.

In color, as pointed out by Scudder and Cockerell,²¹ there is pronounced variation, although its description may be simplified by considering the green form one extreme and the full brownish and ochre form the other, leaving numerous specimens as intermediates between the two. The full green phase, having all the dark markings green and the lighter ones yellowish-green, is represented in our material by five males and one female, although closely approached by five other females. The full brown phase is represented by six males and one female, the remainder of the series being intermediate in coloration. The green phase was noticed chiefly among tall green weeds, while the brown phase was usually found in much fewer numbers upon the tornillo or screw bean. The tegmina are distinctly though not sharply maculate in eight specimens and unicolorous in six, the remainder having the anal vein marked more or less completely with a pale line. There is also a considerable amount of variation in the depth of the glaucous color of the caudal tibiae.

The species has been recorded from Las Cruces and Mesilla Park, Donna Ana County, New Mexico.

MELANOPLUS Stål.

Melanoplus bowditchi Scudder.

This species is represented in the collection by three males and eight females, taken as follows: El Paso, July 10 and 17 (1 ♂, 2 ♀); Aden, July 21 (1 ♂, 4 ♀); Albuquerque, September 14 (1 ♀); Deming, July 18 (1 ♂, 1 ♀). At El Paso it was taken at the edge of the grease-wood-covered mesa and from mesquite growing in the sandhill country east of the city. It frequented cultivated ground at Albuquerque, was taken in grass prairie land at Aden and frequented the mesquite and rabbit-weed plain at Deming.

In actions the species is extremely vigorous and alert, usually making long flights. But one of the specimens approaches anyway closely the type of coloration seen in individuals of the species from eastern Colorado and southwestern Nebraska, this individual being from mesquite at El Paso. The majority of the series are duller with umber browns the predominating colors, the postocular bar not strongly marked in two specimens and nearly obsolete in one. The bars on the dorsum

²¹ *Proc. Davenp. Acad. Sci.*, IX, pp. 41-42.

of the caudal femora are more or less distinct in all but one individual which has them obsolete.

In size the specimens are decidedly larger than individuals from Colorado and Nebraska, as the following measurements show:

	Haigler, Neb. ♂	El Paso, Tex. ♂	Lamar, Col. ♀	Albuquerque, N. M. ♀
Length of body, . .	21 mm.	22.5 mm.	28 mm.	30.2 mm.
Length of pronotum, .	5 "	5.2 "	5.8 "	6.3 "
Length of tegmen, . .	15.8 "	22.5 "	21 "	25.8 "
Length of caudal femur,	11 "	14.2 "	13.5 "	16 "

The previous records of this species from New Mexico are from Belen, Valencia County, Sabinal, Socorro County, Las Cruces, Donna Ana County and Chaves, McKinley County.

Melanoplus herbaceus Bruner.

This variable species is represented by a series of forty-nine males and thirty-three females taken at El Paso, Albuquerque and Alamogordo. At El Paso it was found in a variety of habitats: on greasewood on the slopes of the Franklin Mountains (July 9, 1 ♂, 2 ♀), on greasewood on the mesa and at the edge of the same (July 10 and 11, 4 ♂, 1 ♀), on mesquite growing on the sandhills east of the city (July 17, 4 ♂, 2 ♀), and on irrigated land along the Rio Grande below the city (July 10 and 11, 38 ♂, 25 ♀). In the sandhill region the species was very wary and usually flew into the most inaccessible portions of the thickets of mesquite, while along the river it was plentiful but equally hard to capture. Two males and two females were secured in cultivated land at Albuquerque, September 14, while a single female was attracted to light at Alamogordo, July 12.

In size there is a considerable amount of individual variation, as the following measurements of extremes of the series from along the Rio Grande at El Paso will show:

	♂	♂	♀	♀
Length of body, . .	20 mm.	23.6 mm.	26.2 mm.	29.2 mm.
Length of pronotum, .	4.8 "	5.2 "	5.2 "	6.3 "
Length of tegmen, . .	17.5 "	23 "	20.2 "	25.2 "
Length of caudal femur,	11.2 "	13 "	13.2 "	15 "

The structure of the male cerci and of the furcula exhibits a considerable amount of variation in this species, about half of the males examined showing at least some slight approach to the form called

flavescens by Scudder. A number of specimens are typical of *flavescens* as far as the cerci and furcula are concerned, but a careful study of this large series of eighty-one specimens shows that the slight genital characters and the color of the tips of the antennæ, of the pronotum and of the caudal tibiæ, given specific importance by Scudder to separate *M. herbaceus* and *flavescens*, are by no means specific and can be considered only individual, the extremes being connected by a number of intermediates.

In color we find two quite distinct extremes connected by intermediates, one extreme being uniform light green with the postocular bar subobsolete or entirely lacking, the other various shades of brown, touched with yellowish around the head and along the ventral border of the postocular bar which is quite distinct. Numerous intermediates show the postocular bar distinct with green the general color, others with yellowish and yellowish-brown the general color. The antennæ are usually not infuscate at the tips in the green phase, the majority of the other specimens having a more or less distinct apical infuscation. The caudal tibiæ are generally some shade of glaucous, varying considerably in depth, but a few specimens have a decided greenish tone to these parts.

The species has previously been recorded from El Paso, Texas, and Las Cruces, Mesilla Park and Albuquerque, New Mexico, while Scudder and Cockerell have assigned specimens from Mesilla and Mesilla Park to *M. flavescens*.

***Melanoplus glaucipes* (Scudder).**

At El Paso this peculiar species was found in small numbers in thickets of screw bean or tornillo growing in the low river-land, where on July 10 one male and three females were taken. Two females were also secured on July 10 and 11 from mesquite, while one male and three females were taken, July 17, from mesquite thickets in the sand region east of the city. A single female was taken at Clin, Uvalde County, Texas, July 8, in a damp weedy location. The species is a vigorous one and at El Paso it was extremely difficult to capture, owing to its habit of seeking shelter by retiring to the thickest portion of the mesquite or tornillo bush on which it was found. In such surroundings a net was useless and work with the hands paid a penalty of thorn stabs sufficient to deter any but an enthusiast. It was impossible to flush specimens into the open, as the insects merely shifted their position to another portion of the bush.

There is a considerable amount of variation in the shade of the dorsum of the head, pronotum and anal area of the tegmina, face,

genæ and ventral portion of the lateral lobe of the pronotum, and of the caudal femora; these portions being pale ochraceous in one specimen, very dull ochraceous in several others and warm red brown in another. The majority have these areas umber-brown. The red-brown specimen is from Clin and all the ochraceous individuals from the sandhill country.

The previous records of this species are from Dallas and Bonita, Texas; Mountain Park, Oklahoma; Mesilla Park, New Mexico, and Lerdo, Durango, Mexico.

***Melanoplus atlanis* (Riley).**

Three males and two females of this widely spread species were taken in weedy spots in irrigated land along the Rio Grande below El Paso on July 10 and 11. A single male was taken on July 14 at Wootens, Otero County, New Mexico, at an elevation of about 7,000 feet, while a series of six females was taken in meadow-land at Cloudcroft, July 14-15.

As previously noticed by the authors²² in regard to Arizona material of this species, the series before us show uniformly greater size than is true of specimens from the eastern United States, agreeing with material from Colorado and northern New Mexico, in addition to that previously recorded from Arizona.

***Melanoplus aridus* (Scudder).**

This interesting species, which has a very considerable vertical range, is represented by five males and one female taken at El Paso (July 11, 1 ♂), in Dry Canyon, Sacramento Mountains (July 13, 1 ♂), Florida Mountains (July 19, 2 ♂, 1 ♀) and at Albuquerque (September 14, 1 ♂). A pair of this species from Fort Wingate, New Mexico, taken August 28 by John Woodgate, have also been examined.

At Albuquerque the species was taken on river bottom-land, at El Paso on weeds in field along river bank, while in Dry Canyon and in the Florida Mountains at elevations from 5,000 to 5,500 feet in the juniper and piñon zone, the species occurred among bush oaks (Florida Mountains) and on mesquite (Dry Canyon). In both of the latter situations adults of the species were very scarce, but a number of immature specimens, presumably of this species, were noticed.

The male from El Paso is larger and lighter in color than the other specimens of that sex, while the Albuquerque individual is very dark in color. The latter specimen resembles closely in general color tone

²² *Proc. Acad. Nat. Sci. Phila.*, 1908, p. 396.

representatives of the species from northern Arizona. This is the first record of the species from Texas.

Melanoplus altitudinum (Scudder).²³

Two females of this species were collected in James Canyon, Cloudcroft, July 14–15, one being from the overgrown slope of the canyon, the other from a weedy spot at the mouth of the canyon. The individual from the slope of the canyon is somewhat smaller than the other specimen.

The previous New Mexican records of the species are from northern New Mexico (Scudder), Taos Peak, 13,000 feet (Scudder), ridge between Sapello and upper Pecos River (Scudder, Cockerell) and Cloudcroft (Rehn).

Melanoplus femur-rubrum (De Geer).

A series of seven males and seven females of this widely distributed species were taken in cultivated ground at Albuquerque, September 14, a single male also being collected at El Paso, July 11, in bottom-land along the Rio Grande.

Melanoplus calidus Scudder.

One of the most characteristic grasshoppers of the mountain meadows and of underbrush in certain portions of the forest-land around Cloudcroft is this striking species. Scudder originally described this insect from Gilman's Ranch, Eagle Creek, White Mountains, New Mexico, at an elevation of 7,000 feet; Scudder and Cockerell later recording it from the South Fork of Eagle Creek.

The species was found to be plentiful on July 14 and 15, although in the morning before ten o'clock it was very hard to find. The series taken consists of twenty-nine males and twenty females.

In size there is great uniformity in the male sex and but little variation in the female, and then chiefly in the length of the tegmina. Compared with Scudder's measurements the specimens are generally smaller, picked individuals giving measurements as follows:



Fig. 15. — *Melanoplus calidus* Scudder. Dorsal view of apex of abdomen. ($\times 4$)

²³ The great difficulty of separating some of the brachypterous species of *Melanoplus* from representatives of the genus *Podisma* and the close resemblance existing between *Melanoplus altitudinum* and *Podisma dodgei* was responsible for an erroneous determination made by the senior author (*Proc. Acad. Nat. Sci. Phila.*, 1904, p. 571). The specimens from Raton, New Mexico, and Prescott and Copper Basin, Arizona, there referred to *M. altitudinum*, are really *Podisma dodgei*, as a careful re-examination of all the available material in the two species shows. A series of Coloradoan *P. dodgei* and Wyoming and New Mexican *M. altitudinum* have been used for comparison.

	Scudder's Meas.	Cloudcroft.	
		♂	♂
Length of body,	20 mm.	16.2 mm.	17.2 mm.
Length of pronotum,	—	4 "	4 "
Length of tegmen,	6 "	4.5 "	4.5 "
Length of caudal tegmen,	10 "	10.3 "	10.2 "
	♀	♀	♀
Length of body,	21.75 mm.	18.2 mm.	25 mm.
Length of pronotum,	—	5 "	5 "
Length of tegmen,	6 "	4.7 "	5.2 "
Length of caudal tegmen,	10 "	12 "	12 "



Fig. 16.—*Melanoplus calidus* Scudder. Lateral outline of apex of abdomen. ($\times 4$.)

The great length of the body in the last measured specimen is in part at least due to distension. The tegmina are quite uniform in the males, while in the females 6.3 mm. is the greatest length found. The caudal margin of the pronotum is subtruncate in a few individuals, and very slightly and broadly obtuse-angulate in the great majority. In color the general tone varies from gray-brown to umber-brown, but the pattern varies but little, while the pale yellowish stripe is more marked in some specimens than in others.

This species is apparently very close to *M. quadratus* Scudder from South Fork of Eagle Creek, 8,100 feet, White Mountains, New Mexico; at least the two descriptions are very similar and specimens are determined with considerable difficulty.

***Melanoplus differentialis* (Thomas).**

This destructive species was found swarming on irrigated land along the Rio Grande below El Paso, July 11, two males being taken, while at Albuquerque it was found plentiful in high weeds on cultivated land on September 14, a pair being collected.

***Melanoplus bivittatus* (Say).**

A series of five males and eight females was taken in the bottom-land at Albuquerque on September 14. The caudal tibiae are quite black proximad in a number of individuals and some shade of glaucous distad in all but three specimens, which are more or less strongly yellowish on that portion of the tibiae. The dark line on the dorsal portion of the lateral face of the caudal femora is distinctly marked in all the individuals.

TETTIGONIDÆ.

DICHOPETALA Brunner.

Dichopetala brevihastata Seudder.

A single immature male taken on greasewood at an elevation of 4,800 feet at the mouth of Dry Canyon, Sacramento Mountains, appears to belong to this species, although the identification is attended with a little uncertainty owing to the immaturity of the specimen. Immature specimens apparently of this species were found to be fairly common when beating in the vicinity of the mouth of the canyon.

HORMILIA Stål.

Hormilia elegans Seudder.

Two females of this species were taken at Deming, July 20, both attracted to light. One specimen of the species was found in the lunch-room of the railroad station and brought to us by one of the waiters.

On comparing these specimens with the original measurements and with seven individuals from Florence, Arizona, it became apparent that specimens from the eastern side of the continental divide were larger than representatives from the western side. The following measurements may be of use when more extensive series are examined.

	Near Mesilla, N. M. (type; from Seudder).	Deming, N. M. VII. 20.07.	Deming, N. M. VII. 20.07.	Florence, Ariz. VII. 23.
Length of body (exclusive of ovipositor),	♀ 17 mm.	♀ 15 mm.	♀ 18 mm.	♀ 16.8 mm.
Length of tegmen,	28 "	29 "	31 "	—
Length of wing (approximate),	30 "	31 "	31.5 "	26 "
Length of caudal femur,	19 "	24 "	23.2 "	19 "

Florence, Ariz.

	IX. 20.	VII. 20.	VII. 13	VII. 22.
Length of body (exclusive of ovipositor),	♀ 18.2 mm.	♀ 19 mm.	♂ 15 mm.	♀ 15 mm.
Length of tegmen,	26.5 "	24 "	23 "	25 "
Length of wing (approximate),	29 "	25.5 "	25 "	25.5 "
Length of caudal femur,	20 "	19.5 "	17 "	17 "

Florence, Ariz.

	VI. 14.	VI. 8.
	♀	♀
Length of body (exclusive of ovipositor),	15 mm.	17.8 mm.
Length of tegmen,	24 "	25 "
Length of wing (approximate),	25 "	27.5 "
Length of caudal femur,	19 "	21 "

One of the Deming females is a very pale buff, with the "herring-bone" tegminal pattern but faintly marked. The other individual is in the green phase with the pattern a pale green, and no indication of the blackish suffusion on the sutural areas frequently seen in the species.

The previous New Mexican records for the species were all from the vicinity of Las Cruces and Mesilla in the Mesilla Valley.

ARETHÆA Stål.

Arethæa constricta Brunner.

A single male of this species was taken at Fort Wingate, New Mexico, August 28, 1908, by John Woodgate.

The species has been recorded from Texas; near Organ Mountains, New Mexico; from an arroyo ten miles west of La Luz, Otero County, New Mexico; Tucson and Baboquivari Mountains, Arizona.

SCUDDERIA Stål.

Scudderia furcifera Scudder.

A single female of this species has been examined from Fort Wingate, New Mexico, taken August 23, 1908, by John Woodgate.

The only previous New Mexican records of this species were from the southern portion of the Territory, La Cueva, Organ Mountains, and Dripping Springs, Organ Mountains.

AMBYLCORYPHA Stål.

Amblycorypha huasteca (Saussure).

A single male of this species was beaten from a tall green bush growing in the bottom of Dry Canyon, Sacramento Mountains, at an elevation of 5,200 feet, in the piñon and juniper zone.

This specimen is of considerable interest, as when compared with a series of eight males and two females from Shovel Mount, Burnet County, Texas, the tegmina are found to be appreciably longer, although the body and caudal femora are of about the same size. The dimensions of the Dry Canyon specimen compared with an average Shovel Mount male and the original measurements of Saussure are as follows:

	Dry Canyon. ♂	Shovel Mount. ♂	Mexico (type; from Saussure). ♀
Length of body,	23.5 mm.	23 mm.	—
Length of pronotum,	7.5 "	7 "	—
Length of tegmen,	42 "	33.5 "	34 mm.
Greatest width of tegmen,	12 "	9.8 "	11 "
Length of caudal femur,	31 "	31.5 "	—

A sufficient series of the longer winged form may show the necessity of recognizing it as a geographic race.

This is the first record of the species from New Mexico and one of the few from west of Texas. The senior author has recorded it from southern Arizona, and Snow has credited it to Oak Creek Canyon, Coconino County, Arizona.

EREMOPEDES Cockerell.

Eremopedes albofasciata Scudder and Cockerell.

Four immature specimens, two of each sex, were taken at Aden, July 21, in grass prairie land; a single immature female from Deming, July 18, taken on rabbit weed, is also in the collection. The only previous record of the species was that of the type from Mesilla Park.

ATELOPLUS Scudder.

Atelopius macroscelus²⁴ n. sp.

Type: ♀; El Paso, El Paso County, Texas. July 11, 1907. (Hebard and Rehn.) [Hebard Collection.]

Allied to *A. notatus* Scudder and *A. schwarzi* Caudell, but differing from both in the much more elongate caudal limbs and ovipositor and the different color pattern.

Size medium; form moderately elongate. Head quite short but rather broad and deep; fastigium of the vertex rounding to the facial fastigium which it touches, surface of the same not appreciably sulcate; eyes not prominent, subovate in outline; antennæ slightly more than twice the length of the body, proximal joint rather large, slightly produced on the internal face. Pronotum with its dorsal length slightly more than twice that of the exposed dorsum of the head, the dorsum of the pronotum regularly arcuate in transverse section rounding into the lateral lobes; cephalic margin of the dorsum subtruncate, caudal margin very broadly and shallowly but distinctly obtuse-angulate emarginate; when seen from the side the dorsal line of the pronotum is nearly straight, no sellate tendency being present; lateral lobes of the pronotum very considerably longer than deep, the ventral margin obtuse-angulate with the caudal portion of the angle slightly arcuate-emarginate. Tegmina present as the merest pads, hardly visible caudad of the pronotal margin. Prosternal processes the merest obtuse-angulate shoulders, in no sense spines. Abdomen with a very blunt dorsal carina; terminal dorsal abdominal segment with a considerable median impression which is folded ventrad; cerci short, conical, acute; ovipositor about three-fourths the length of the

²⁴ Μακροσκελής, having long legs.

caudal femora, moderately robust, somewhat arcuate proximad and distad, nearly straight in the middle, the proximal third more robust than the remainder, the apex acute; subgenital plate obtuse-angulate with a rather large and quite deep median V-shaped emargination, a pair of moderately distinct sub-parallel longitudinal carinae present on the plate. Cephalic and median limbs of moderate length; cephalic femora equal to the pronotum in length, unarmed; cephalic tibiae armed dorsad with three spines on the outer margin, with six on each of the ventral ones; median femora very slightly longer than the cephalic, unarmed; median tibiae with the dorsal margins armed with two (cephalic) or four (caudal) spines, each of the ventrals with six spines. Caudal femora slightly longer than the body, moderately inflated in

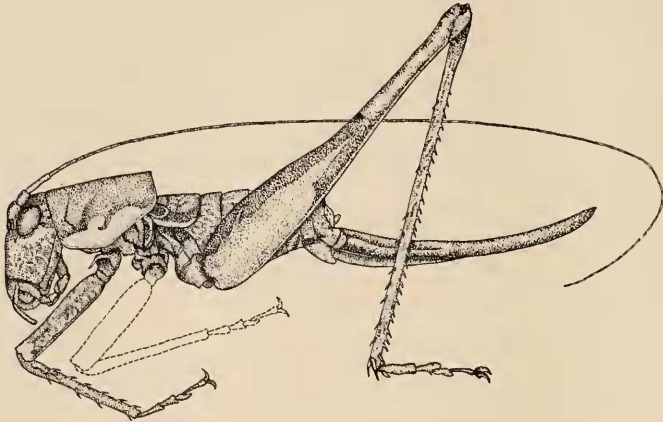


Fig. 17.—*Atelopius macroscelus* n. sp. Lateral view of type. ($\times 2$.)

the proximal half, slender distad, the greatest width contained nearly six times in the length, externo-ventral margin with a single spine, interno-ventral with five; caudal tibiae about equal to the femora in length, all the margins spined, the dorsal ones with a number considerably exceeding that of the ventral series.

General colors cream white and blackish-brown, generally mingled and marbled, with but little pattern aside from several rather darker longitudinal areas on the abdomen and a median obsolete V-shaped figure on the pronotum. The ventral portion of the lateral lobes of the pronotum is pure cream-white divided sharply but irregularly from the darker dorsal section. On the face, the pleura and the sides of the proximal portion of the abdomen the lighter color predominates or is more conspicuous on account of the marbling being coarser.

Limbs marbled as is the case with the body, but a tendency toward broad annuli is noticed; caudal limbs with considerable blue-gray present in place of blackish-brown. Eyes wood-brown clouded with burnt umber; antennæ, except for the proximal joint, vandyke brown; ovipositor with the general pattern.

Measurements.

Length of body,	21	mm.
Length of pronotum,	6.8	"
Length of caudal femur,	25	"
Length of ovipositor,	18	"

The type and an immature paratypic female (July 10) were taken on greasewood on the mesa to the south and east of the Franklin Mountains.

STENOPELMATUS Burmeister.

Stenopelmatus oculatus Seudder.

A single female of this species from Fort Wingate, New Mexico, taken October 15, 1907, by John Woodgate, has been examined.

CEUTHOPHILUS Seudder.

Ceuthophilus uniformis Seudder.

Three females of this species were taken at Cloudercroft on July 14, under the bark of a stump of yellow pine (*Pinus ponderosa*). The only previous New Mexican records of the species are from Beulah, San Miguel County, and plains of northern New Mexico, eastern slope. Elsewhere the species is found in Colorado, western Nebraska and eastern Kansas.

Ceuthophilus valgus Seudder.

A single male of this very interesting species was taken from the interior of a decayed log of Douglas fir (*Pseudotsuga mucronata*). This individual is slightly larger than Seudder's original measurements and considerably larger than an individual from Beulah, New Mexico.

The species has been recorded from Santa Fé, Beulah and White Mountain region, New Mexico, and also from certain localities in Colorado.

Ceuthophilus paucispinosus Rehn.

Two females of this species were taken in the Florida Mountains in November by Dr. H. A. Pilsbry. The specimens are of average size and do not differ from individuals from the Huachuca Mountains, Arizona. This is the first record of the species from New Mexico, the

previous records being from the Huachuca Mountains and Oak Creek Canyon, Arizona, and without exact data from the southern portion of the same Territory.

UDEOPSYLLA Seudder.

Udeopsylla socorrensis (Rehn).

This species, which was described as a species of *Phrixocnemis*, should be placed in the genus *Udeopsylla*, probably with *U. franciscanus* and *vierecki* representing a new subgenus. The structure and armament of the caudal tibiae are quite different from the type found in *U. robusta*, but with the small amount of material available it seems best to defer any division until an opportunity to examine a more extensive series presents itself. A single male of this species from Fort Wingate, collected May 12, 1908, by John Woodgate, has been examined. The only previous record for the species is that of the types from the Magdalena Mountains, New Mexico.

GRYLLIDÆ.

ECTATODERUS Guérin.

Ectatoderus borealis Seudder.

A single nearly mature female of this species was taken from a dead yucca on the greasewood slope between Alamogordo and Dry Canyon, July 13. Two adult females taken in the Florida Mountains in November by Dr. H. A. Pilsbry have also been examined, as well as a male from Claremont, California, taken by Prof. C. F. Baker.

The Alamogordo specimen has the lateral lobes of the pronotum quite blackish, but this is not the case with the Florida Mountain females, although present in the Claremont male. Its absence may be due to the fact that the specimens in which this coloration is absent were collected in alcohol.

The previous New Mexican records of this species were from La Cueva and Dripping Springs, Organ Mountains.

NEMOBIUS Seudder.

Nemobius neomexicanus Seudder.

Three specimens of this species, one adult male, one adult female and one immature individual, were taken at Alamogordo, July 16, in long grass under cottonwoods in the irrigated town park, where the species was abundant.

Both of the adults have the wings shorter than the tegmina, but otherwise they fully agree with an individual from Florence, Arizona.

The species has been recorded from Las Cruces and Mesilla, New

Mexico; Douglas, Cochise County, and Florence, Pinal County, Arizona; Los Angeles, California, and several localities in Lower California.

Nemobius utahensis Scudder.

A single female of this species, previously known only from Spring Lake and Salt Lake Valley, Utah, and Sedalia and Montevista, Colorado, was taken at Albuquerque, September 14, where the species was common in heavy weeds in the bottom-land. The capture of the species at Montevista, Colorado, is interesting when taken with the Albuquerque record, as the former locality is in the upper portion of the Rio Grande valley.

GRYLLUS Linnaeus.

Gryllus personatus Uhler.

A single male of this species was taken at night from under a tin in the street at Alamogordo, July 12. A single female taken at San Marcial, Socorro County, New Mexico, July, 1907, by Otho Poling, has also been examined. Both specimens are macropterous. These are the first positive records of the species from New Mexico.

Gryllus armatus Scudder.

A series of five males and six females of this species was taken at Deming, July 19 and 20, where they were found attracted to electric lights. A single female was also taken, attracted to lights at Alamogordo, July 12. All the specimens are macropterous.

The principal measurements of the Deming specimens are as follows:

	♂	♂	♂	♂
Length of tegmen, .	12.5 mm.	14 mm.	12.5 mm.	12.8 mm.
Length of caudal femur	10.5 "	12 "	10.5 "	10 "
Length of ovipositor	—	—	—	—

	♂	♀	♀	♀
Length of tegmen, .	13 mm.	13.2 mm.	12.5 mm.	13 mm.
Length of caudal femur,	11 "	10.5 "	10.8 "	10 "
Length of ovipositor,	—	13 "	13.8 "	13 "

	♀	♀	♀
Length of tegmen, . . .	13.5 mm.	13 mm.	13.5 mm.
Length of caudal femur, . . .	10.5 "	10.5 "	10.2 "
Length of ovipositor, . . .	14 "	12.8 "	12.2 "

These are the first records of the species from New Mexico.

Gryllus pennsylvanicus Burmeister.

A single male of this species was taken from under a stone at night at Cloudercroft, July 15, while a female specimen was taken at light at Alamogordo, July 12.

The previous positive New Mexican records of the species were from Santa Fé, Las Vegas, Gallinas Canyon, Fort Buchanan and Mesilla Park, May to August.

Gryllus alogus Rehn.

A series of nine males and six females are contained in the collections examined in this connection. Of this series five males and three females were taken at Alamogordo, July 12 and 13, one male attracted to light, the remainder taken from a dead yucca; one pair was taken at El Paso, July 11, from a burrow, also inhabited by immature gryllids of other species, at the edge of the mesa; two males and one female from desert hillside and grass prairie at Aden, July 21; a single male from Deming, July 19, attracted to light, and a single female from Fort Wingate, May 12, collected by John Woodgate.

The Fort Wingate individual is quite small, no more than two-thirds the size of the other females, while the coloration of nearly all the specimens is uniformly darker than that of the type. The species appears to be closely related to the Californian *G. vocalis*.

The measurements of the specimens examined are as follows:

Alamogordo.				
	♂	♂	♂	♂
Length of tegmen,	9.5 mm.	10 mm.	11 mm.	10 mm.
Length of caudal femur,	11.8 "	11 "	11.5 "	11 "
Length of ovipositor	—	—	—	—
Alamogordo.				
	♂	♀	♀	♀
Length of tegmen,	9.8 mm.	7 mm.	8.2 mm.	8 mm.
Length of caudal femur,	11 "	11.5 "	12 "	12 "
Length of ovipositor,	—	12 "	13.5 "	—
El Paso.				
	♂		♀	
Length of tegmen,		11 mm.	9.2 mm.	
Length of caudal femur,		11.5 "	13 "	
Length of ovipositor,		—	14 "	
Aden.				
	♂	♂	♀	
Length of tegmen,	9.5 mm.	9.5 mm.	9 mm.	
Length of caudal femur,	11.5 "	11 "	12 "	
Length of ovipositor,	—	—	13.5 "	
Deming. Ft. Wingate.				
	♂		♀	
Length of tegmen,		11 mm.	4 mm.	
Length of caudal femur,		11.8 "	8.7 "	
Length of ovipositor,		—	10.2 "	

The previous records are from Albuquerque, New Mexico, Huachuca Mountains and Phoenix, Arizona.

ECANTHUS Serville.

Ecanthus quadripunctatus Beutenmüller.

Three immature individuals swept from rabbit-weed at Deming, July 18, appear to be referable to this species.

This is the first record of the species from New Mexico.

Eoanthus fasciatus Fitch.

A pair of this species were taken from high weeds at 4,900 feet elevation in Dry Canyon, July 13. The limbs are brownish-yellow in both specimens, while the antennæ are blackish toward the bases.

The previous New Mexican records of the species are from Mescalero, Otero County, and Mesilla, Donna Ana County.